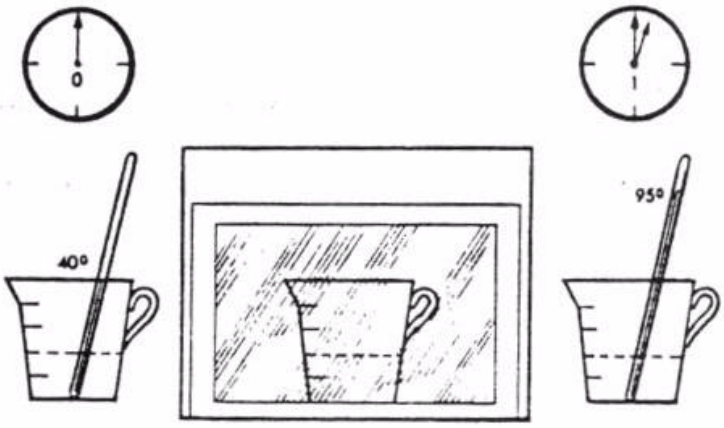
SHARP

Servicing Consumer Microwave Ovens



Student Guide

Covers 1999 - 2000 models

ST-MWO2000

SHARP

The microwave oven is made of three basic sections, the magnetron, the high voltage, and the control section. The intent of this training manual is to explain how each section operates and cover the troubleshooting techniques required for proper repair of the Sharp microwave oven line for 1999 - 2000.

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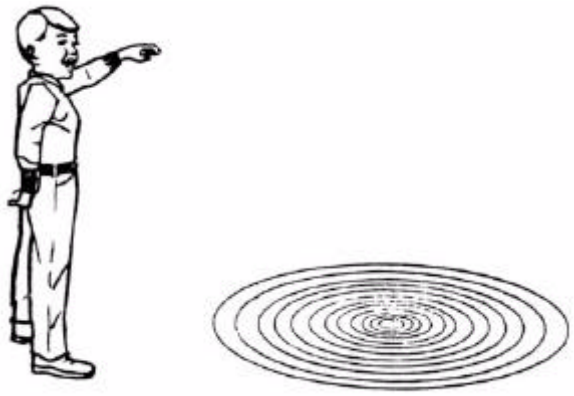
MICROWAVE OVEN BASICS



What Is Microwave Energy?

When a stone is thrown into a quiet pond, waves are formed which radiate outward from the point at which the stone broke the water's surface. There are other kinds of waves that we cannot see, but know they exist because we observe their effect. They are known collectively under the term *radiation*, the process of emitting radiant energy in the form of waves or particles.

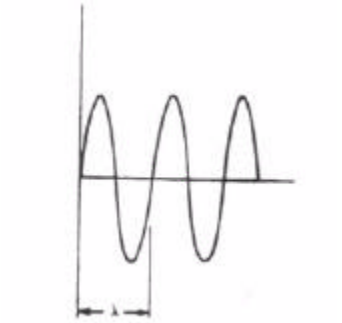
These waves also radiate outward from the center like the waves on the surface of the pond. They travel, however, at the speed of light, 186,282 miles per second, and carry small bundles of energy called photons that vibrate at various frequencies.

There are two basic kinds of electromagnetic radiation:

IONIZING	**NON-IONIZING**
X-rays	radio waves
gamma rays	microwaves
cosmic rays	infra-red waves
ultra-violet rays	light waves

IONIZING RADIATION can cause chemical changes to take place with little or no temperature rise.

NON-IONIZING radiation in sufficient intensity will cause a rise in temperature.



Radiant waves are characterized by their wavelength and their frequency of vibration (number of complete cycles per second)
[Cycle is the change of an alternating waveform from zero to the most positive peak, back to zero, to the most negative peak and back to zero.]

Wavelength x frequency / the speed of light frequency

1 cycle per second = 1 Hertz
1,000 cycles per second = 1 Kilohertz
1,000,000 cycles per second = 1 Megahertz

Thus as the frequency increases the wavelength becomes shorter.
Microwaves vibrate millions of times per second (that is, they have a very high frequency) and are, therefore, very short waves, hence the term microwaves.

There are two microwave frequencies in general use for microwave ovens:

- 915 MHz (wavelength is 32 cm or about 12.5")
- 2450 MHz (wavelength is 12 cm or about 5")

These are two of the frequencies allocated by the Federal Communications Commission (FCC) for Industrial, Scientific and Medical Use (sometimes called the ISM frequencies).
The term MHz stands for megahertz and means millions of cycles per second. The term hertz is used to honor Heinrich Hertz, a German physicist who succeeded in producing and detecting electromagnetic waves, which were later called Hertzian waves.

In summary, microwave energy consists of bundles of energy vibrating at microwave frequencies and moving at the speed of light. The effect on material in which they are absorbed is a rise in temperature.

CLASSIFICATION OF ELECTROMAGNETIC WAVES

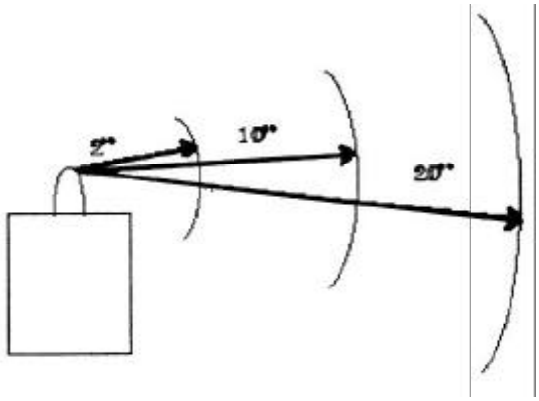
BAND		FREQUENCY	WAVELENGTH
VLF	Very Low Frequency	10 KHz	100 Km → 10 Km
LF	Low Frequency	100 KHz	1 Km
MF	Medium Frequency	1 MHz	100 m
HF	High Frequency	10 MHz	10 m
VHF	Very High Frequency	100 MHz	1 m
UHF	Ultra High Frequency (Microwave Oven)	1 GHz	10 cm
SHF	Super High Frequency	10 GHz	1 cm
EHF	Extreme High Frequency	100 GHz	1 mm
INFRARED			10^{-3} mm
VISIBLE ULTRA VIOLET		10^6 GHz	10^{-6} mm
X-RAY GAMMA-RAY			

Electromagnetic Wave: 10 KHz - - - 300 GHz

Microwave: 300 MHz - - - 300 GHz

Wavelength: $\lambda = c/f$ NOTE: $c = 3 \times 10^8$

Wavelength for Microwave Oven: $\lambda = 12.24$ cm Note: f = 2450 MHz



Microwave energy looses power as it travels through space.
Power is lost at a rate that is inversely proportional to
the distance traveled.

Microwave Properties

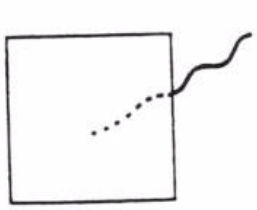
So far we have mentioned two characteristics or properties of microwave energy: absorption and transmission. Like light waves, microwave energy is also reflected. Metals reflect microwaves and since there is no absorption, metals do no heat. Many materials in addition to glass transmit microwaves and again since there is no absorption there is no heating. Paper, china and some plastics transmit microwaves and are therefore likely candidate materials for utensils for use in microwave ovens. The overall result is that we are able to cook or heat foods in an oven on utensils, which are relatively cool to the touch. No more burnt fingers.

Reflection

Microwave energy is reflected from metals. Metals do not heat.

Transmission

Many materials transmit microwave and do not heat



Absorption

Those materials which absorb microwaves, are heated. Foods rank high as microwave absorbers.

Advantages of Microwave Oven Heating

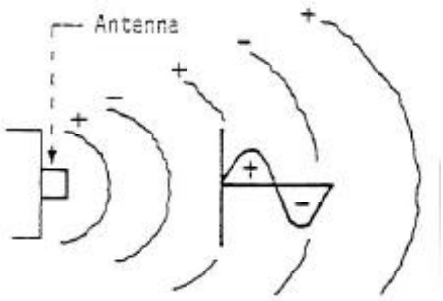
As the conventional heating methods apply heat to the exterior of a substance; dielectric substances such as foods, wood, plastics, and rubber are heated unevenly because they are poor in heat transfer and slow in heat penetration, resulting in a considerable differential temperature between the exterior and the interior. Accordingly, the heating temperature needs to be increased gradually in a long time if uniform heating is required. Also, much heat is wasted for other substances than the heating object, for example, air, pots, pans and the heat source. Thus the conventional heating is poor in the heat efficiency and also difficult in the adjustment of the heating rate. On the contrary, microwave oven heating has the following advantages.

1. Even Heating: Since the microwave penetrates into substances to some depth, it heats the substances more evenly than the conventional heating methods.
2. Very high heating efficiency and speedy cooking.
3. The microwaves do not heat anything other than absorbing materials such as food.
4. Exact Control of Heating Rate: The microwave output is regulated as desired and the cooking time can be instantaneously set by a timer.
5. Heating Substance of any Shape: The microwave can easily penetrate and scatter into the heating substance of any shape.
6. Simple oven construction and easy handling. The controls are very few and they are solid state.
7. Very clean heating system, suitable for foods and pharmacy.

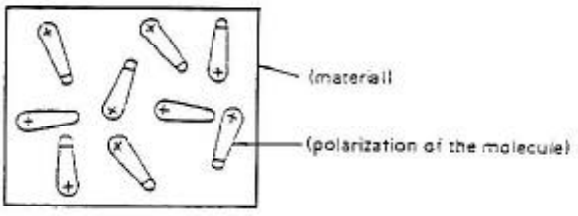
How Does Microwave Energy Produce Heat?

All matter is made up of atoms and molecules. Some of these molecules are electrically neutral, that is they have no electrical charge. Carbon tetrachloride, benzene and paraffin wax are examples of electrically neutral materials and microwave energy will pass through these compounds as if they weren't present.

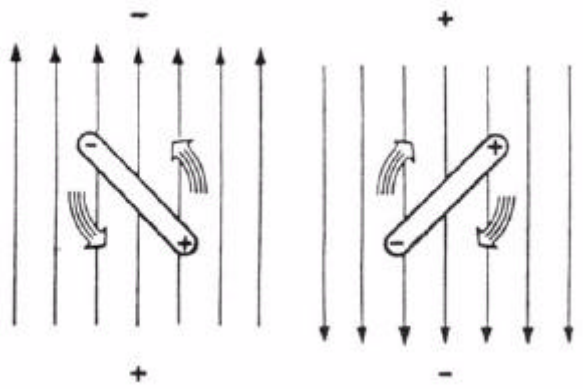
Most matter, however, is not electrically neutral, and when an electrical field is applied the molecules tend to behave like microscopic magnets and attempt to line up with the field. However, when the electric field is changing millions of times each second, these molecular magnets are unable to keep up because of other forces acting to slow them down, known as friction. Such forces which restrict their movement may be mechanical such as is the case with ice or solid fats, or viscous as the case with a syrup like molasses. The energy of the microwaves in trying to overcome these forces is converted to heat. In a sense the material converts the energy to heat, or it might be said that the material heats itself.



Electric Field



Molecule without Electric Field



We physically experience a similar phenomenon when we stand inside before a window on a cold sunny day. The sun generates energy that is radiated through space to the earth. The rays, mostly infrared, pass though the glass window without heating it. The glass is transparent to them. The window itself is cold to the touch. The molecules of our body, being electrically charged, behave like tiny magnets and convert the sun's energy to heat, and our body feels warm.

How Does Microwave Energy Cook So Fast?

An additional characteristic of microwave energy is its ability to penetrate deeply into food materials and to produce heat instantaneously as it penetrates. This is in sharp contrast to conventional heating, which depends on the conduction of heat from the surface to the inside. Conduction heating can be accelerated only by increasing the surface temperature and obviously there are limits to this approach if excessive overcooking of the surface of the food is to be avoided.

Measurement of the temperature distribution in an item heated in a microwave oven reveals another difference. The surface will be usually cooler than an inch or so below the surface. This is caused by radiation of heat from the food surface to the cooler surroundings of the microwave oven. It does not happen in a conventional oven because of the much higher temperatures in such an oven.

Microwave Power: Its Measurement and Its Meaning

To properly develop a sense of timing in microwave cooking, it is first necessary to know how much power is available in the oven. A microwave oven is not like a conventional hot oven. There is no excess of heat available. All of the microwave energy is absorbed by the food. There is little or no wasted energy.

We measure power by converting the microwave energy into heat and measuring it in a simple calorimeter. The tools we need are a Pyrex measuring cup, a thermometer, a clock and some cold water.

Pour two cups of cold tap water in the Pyrex measuring cup. Note the temperature. Heat the water in the microwave oven for one minute and measure the temperature again. The difference in temperature times 17.5 is the power in watts. This is the amount of power generated in the oven in one hour. One-sixtieth ($1/60^{th}$) of this power is available every minute.

If the oven power is 1000 watts (1 kilowatt), then there are 3413 British Thermal Units of heat available with which to cook.

A British Thermal Unit (Btu) is the amount of heat which will raise the temperature of one pound of water one degree Fahrenheit. In terms of BTU then, a one kilowatt oven puts out 57 Btu each minute, and if one pound of water were placed in the oven it should increase in temperature 57°F. in one minute.

With this information the effect of food composition on heating time can be discussed somewhat more intelligently. Most foods contain moisture in varying amounts with the exception of pure fats like salad oils, shortening and lard. Another exception is dehydrated foods which do not depend on moisture to convert microwave energy into heat. The amount of moisture in a food has a direct bearing on its heating rate in a microwave oven.

One pound of food with 50% moisture will take less time to heat to a specific temperature than one pound of food with 75% moisture. Or if both are heated for the same length of time, the former will reach a higher temperature than the latter. One pound of water, however, will heat only half as fast as one pound of fat. The reason for this requires an explanation of the term specific heat. This is a measure of a material's ability to hold heat as compared to water. Water has a value of one (1.0). Fats are about 0.5. Thus water takes twice as much heat as fat to increase its temperature by one degree. Therefore in our one kilowatt oven, one pound of fat will increase in temperature by 114°F, however, the same amount of water will only increase 57°F. (It should be noted that this does not apply at high temperatures where some of the water may be changed to steam. This change uses up much more energy.)

A simple formula shows the relationship between the heat required and these other factors:

"Heat required (BTU) equals Weight (lbs.) times specific heat times temperature difference (°F.)"

$$Q = W \times s \times t$$

Here's an example:

How long would it take to heat 12 ounces of canned green beans to 160°F. in a one kilowatt microwave oven? The specific heat of most vegetables because of their high moisture content is around 0.9. Let us assume that the beans would be at an initial temperature of about 70°F.

$Q = 0.75$? lbs. $\times$ 0.9 $\times$ (160°F. - 70°F.)

$Q = 60.75$ BTU

Since our oven (1 kW) provided 57 BTU per minute, then the heat required (Q) divided by 57 BTU/minute would give the time.

60.75/57.0 = about 1 minute 3 seconds

How long would it take if the green beans were just removed from a 40°F. refrigerator?

$Q = 0.75$ lbs. X 0.9 $\times$ (160°F. - 40°F.)

$Q = 81$

Time = 81/57 = about 1.5 minutes

When two foods at different starting temperatures are heated simultaneously in a microwave oven the colder food takes longer than the warmer food. An interesting example is that of apple pie and ice cream. With the pie at room temperature and a scoop of hard frozen ice cream on top, the pie can be warmed without melting the ice cream. About 15 seconds in a 1 kW oven will do the trick.

Browning

The brown surface color of foods is due to a chemical reaction between food sugars and amino acids, the building blocks of protein foods. This reaction proceeds slowly at low temperatures and is accelerated by increasing the temperature. In microwave cooking the surface temperature of foods rarely exceeds 212°F, the boiling point of water, and is usually much lower. Because of this, most foods cooked in microwave ovens lack the surface coloration expected of certain foods. A steak or a meat patty, for example, would have a gray unappetizing surface appearance. Baked goods would not have a brown crust. The appearance of such foods can be enhanced by placing them in a hot oven for a few minutes, or in the case of the steak and meat patty, on a grill or under a broiler. A number of restaurants which do a sizable steak business pre-sear a quantity of steaks in advance and finish them in seconds in the microwave when ordered. Some foods, which because of their size take longer to cook in a microwave oven, do take on an acceptable surface appearance. The presence of surface fats as in beef roasts or roasting chickens and turkeys aid this. These fats reach temperatures above 212°F. and act to accelerate the browning reaction.

Size Grading

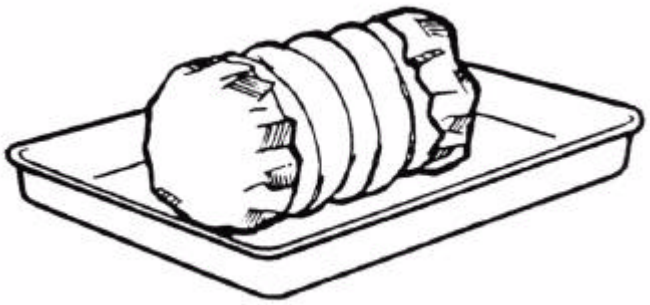
Since small items cook faster than large items, it is good practice to do all of one size at a time. In baking potatoes, for example, if they are nearly alike in size they will all be finished at the same time. The alternative to size grading is to remove the smaller items as they are done and continue to cook the larger items. This requires considerably more attention.

Food Geometry

Regular shapes heat more uniformly in a microwave oven. When the shape is irregular the thin, narrow parts tend to overcook and may be dried out by the time the thicker parts are done. This of course happens in conventional cooking but is less pronounced because cooking is slower. Where it is possible to control the shape, as for example with a meat loaf or by tying a beef roast into a more cylindrical form, much more uniform results are obtained. Where this is not possible, thin parts may be covered with aluminum foil for a part of the cooking cycle. The same technique can be applied in protecting the wing tips and legs of roasting chickens and turkeys.

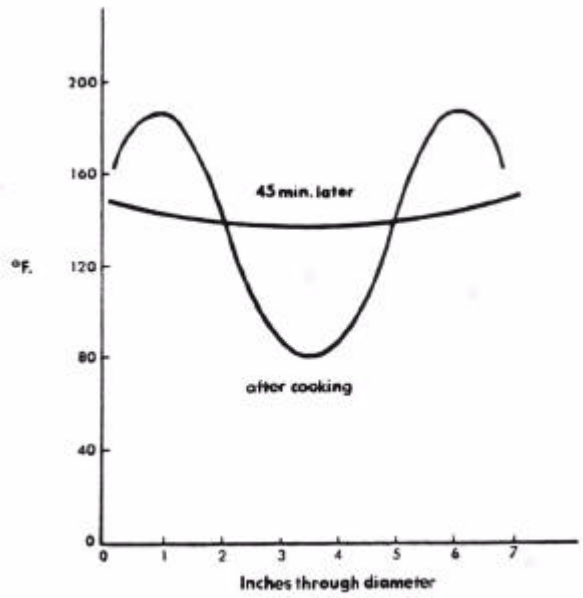
Shielding

This subject was mentioned briefly before, but deserves a more lengthy treatment. Since metals reflect microwave energy we can use this phenomenon to advantage in certain cooking operations to restrict heating in certain areas. A good example to illustrate this effect is in the cooking of a large beef roast. First, wrap aluminum foil over the outer two inches at each end of the roast and cook for 2 to 3 minutes per pound (in a 1 kW oven 20 to 30 minutes for a 10 lb. Roast). The roast should be turned at least once during this time. Remove the foil and cook for an equal period of time, again turning at least once. Remove the roast from the microwave oven, cover and let stand an additional 30 to 45 minutes or until a meat thermometer inserted into the center of the roast reads 140-150?F. Shielding the roast in this way during cooking will insure a more uniform degree of doneness from one end of the roast to the other. If a more will done roast is desired, it can be returned to the oven for an additional 5 to 10 minutes.



A circle of foil placed in the center of a slice of left over roast will keep it from becoming too well done while warming it for consumption. When heating a casserole, the use of a strip of foil around the edge will slow down the heating effect in this area and insure a hotter center.

There are many possibilities using foil and metal forms to control microwave heating. Only a few suggestions have been noted here.



Containers and Packaging Materials

One of the principle advantages of microwave cooking is that it often can be accomplished in the serving dish or in the package in which the food was purchased. With the exception of metals, all packaging materials are transparent to microwave energy. The list includes ovenproof glass, ceramics, chinaware, plastic ware, and paper containers of all types and plastic films.

It is not entirely true that in microwave cooking only the food is heated. Some plastics must be used with caution. Melamine plastic ware, for example, absorbs enough energy to cause charring in places. Such plastic ware quickly becomes too hot to handle. Styrene's give off a strong odor and deform if heated too long.

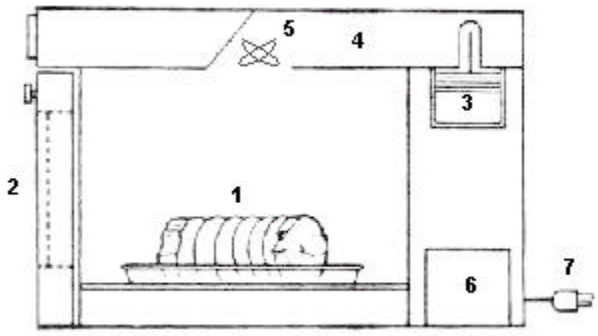
The amount of energy containers absorb can be determined by making an oven power measurement with and without the container in the oven. The difference is the amount of energy absorbed by the container.

Some ceramic dinnerware may absorb several watts of power for each ounce of weight. Considering the weight of such containers, the total power absorbed can be considerable. In some cases this is a desirable feature since foods in these dishes tend to remain warm longer after serving.

Certain plastic materials such as high density polyethylene and polypropylene make quite acceptable containers for microwave oven use. Some foods are being packaged commercially in containers made of these materials. A number of plastic containers are being offered which can be used in both microwave and conventional ovens.

The Microwave Oven

Unlike most cooking appliances in which the food to be cooked is overwhelmed with heat, a microwave oven operates essentially at room temperature. In fact, if anything, the food heats the oven.



Meet the key components of a microwave oven:

1. Cavity	Provides frame for microwave oven.
2. Door	Provides access to cavity.
3. Magnetron	Generation of microwave power.
4. Waveguide	Couples magnetron antenna to oven cavity.
5. Stirrer Antenna	Reflects microwave energy to ensure even cooking.
6. Power Supply	Supply filament and high voltage to magnetron.
7. Power Cord	Connects to electrical outlet.

The main function of the power supply is to convert AC line voltage to the high voltages required by the microwave energy generator, the magnetron. When the magnetron is energized it generates high frequency energy which then passes down the waveguide to the cavity. As the stirrer antenna turns, it provides even absorption in the food load. Without the stirrer antenna, the food load would be subject to standing hot and cold spots where the microwaves are not evenly distributed.

The food load is supported on a ceramic shelf positioned off the floor of the oven for a reason. This position permits some of the energy to be reflected from the oven floor into the food from below. If this were not done the bottom of the food would lag behind in cooking giving uneven doneness.

The purpose of the oven door is to provide an access to the cavity and also to confine the microwave energy. A proper fitting door is essential to completely confine the energy and, it, as well as the door flange, should be wiped clean regularly to insure good contact of the door and the door flange. Considerable ingenuity has gone into microwave oven door design because it is such a critical feature of the oven. A quarter wave slot or "choke" seal around the perimeter of the door acts to choke off or cancel out microwave emissions at this point.

Oven controls consist mainly of a touch pad, microcomputer, function display, interlock switches and primary (cook) relay. The microcomputer is very accurate so that heating cycles can be set with a high degree of accuracy. The microcomputer is important because all microwave cooking is gauged by time, not temperature and time.

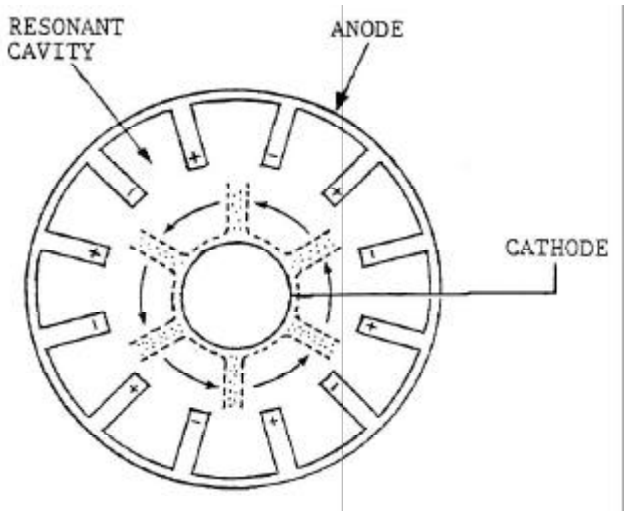
A few extra seconds of cook time in some cases can mean the difference between success and failure. An audio signal usually indicates when the set time has elapsed and the oven has turned itself off. The oven may also be turned off simply opening the door. To protect the user from unnecessary exposure to microwave energy is a requirement of all microwave ovens, and any one of the three interlocks operate when the door is opened, which could turn off the oven.

The Heart of a Microwave Oven

Magnetron & associated parts:

1. Temperature fuse to protect the magnetron against excessive heat.
2. Fan motor to force cool air in the magnetron
3. Fan duct to direct air stream from the motor.

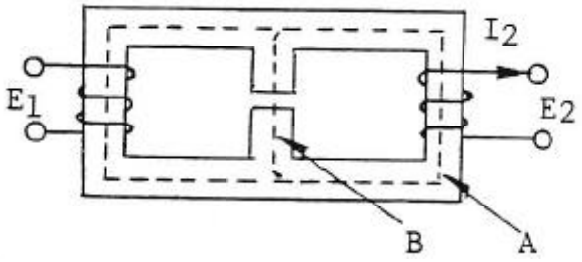
The magnetron cross-section shows a common twelve-cavity design. Each cavity is resonant at the fundamental frequency of oscillation. As the cathode is heated in a hard vacuum, electrons are "boiled off" accelerated towards the anode by a high voltage (typically -4000 volts) and rotated in a helical path by the magnetic focusing field. As electrons boil off, they rotate in clouds, tangential to the cavities, stimulating the build-up of microwave energy in these cavities. As the rotating electrons interact with the fields in the cavities, they get more strongly focused until "spokes" of electrons are formed, much like the spokes of a rotating wheel. When the spokes of electrons, or space charge, rotate synchronously with the microwave fields of the cavities, the maximum energy is coupled from the electrons to the oscillations. Straps connect alternate cavities so that all cavities resonate in unison, energy flows up the antenna, and is fed into the cooking cavity.

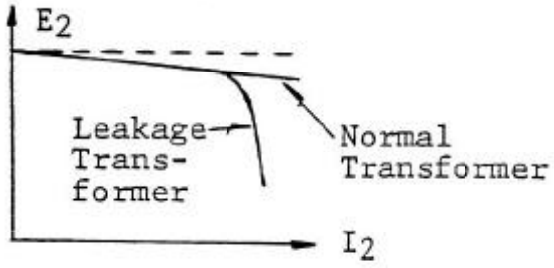


Power Transformer:

The filament transformer is of conventional design and supplies 3V to the filament of the magnetron. The high voltage transformer is a unique design and is called a leakage transformer.

In normal operation, the magnetic flux is induced in the path labeled A (below). When excessive current is drawn the magnetic flux is induce in the path labeled B. This way, any short in the secondary will automatically disable the high voltage section and protect expensive parts against damage.





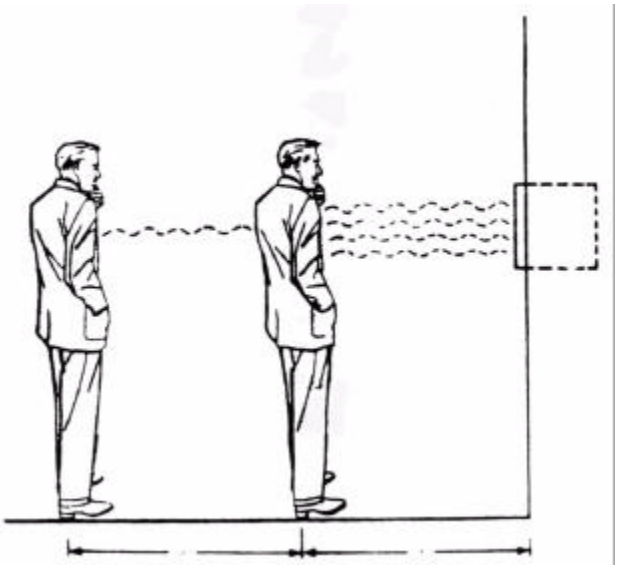
Microwave Safety

Public Law 90-602, the Radiation Control for Health and Safety Act of 1968 was passed by Congress, October 18, 1968. One of the purposes of this law was to establish standards for various electronic products' radiation so that the public could not be exposed unnecessarily to excessive amounts of radiation of various kinds given off by these products. Items such as television sets, sun lamps, microwave ovens and various other products are covered by this law. Standards for microwave ovens went into effect October 6, 1971. Under these standards, radiation leakage from microwave ovens cannot exceed one (1) milliwatt per square centimeter (mW/cm^2) measured two (2) inches from the oven prior to factory release, and five (5) mW/cm^2 thereafter. The measuring equipment to be used is also specified in the standards.

Before the standard for microwave ovens went into effect, industry had operated with a voluntary standard $10mW/cm^2$. Standards were established in order to protect technicians working around radar sites from being exposed to possibly dangerous levels of microwave radiation. Experiments with animals had shown that continuous exposure at relatively high levels of radiation could raise body temperature to a fatal level. The $10mW/cm^2$ standard had a considerable margin of safety built in. This standard for radar workers was based on what is called "whole body" radiation: that is, conditions under which each square centimeter of the body is exposed to radiation. It is said that body temperature will rise 1°F. if exposed long enough at this power level. By way of contrast, solar energy reaching the Earth on a sunny day may be 60 to 100 mW/cm^2. Staring at the sun represents a far greater hazard than exposure to 10 mW/cm^2 of microwave radiation. Serious eye damage, even blindness has been known to occur from improper observation of a solar eclipse. On the other hand, microwave diathermy at the same frequency used in microwave ovens is used for treatment of certain eye diseases. The level of energy employed is much greater than $10mW/cm^2$ and for periods longer than one would stand in front of a microwave oven. Dr. James Ban Allen, a well known authority of radiation technology has expressed the microwave hazard from the operation of a microwave oven, as "about the same as the likelihood of getting a skin tan from moonlight." Even the Surgeon General of the United States has publicly stated that no injuries from microwave oven use have been reported.

The main concern is about microwave radiation leakage from around the oven door. Some doors of earlier models were relatively loose fitting, particularly after being in use for a while. Microwave energy can radiate from around such a door, just like light can be seen under a door to a lighted room. The difference is that microwave radiation isn't visible. It presence, however, can be detected with the proper instruments. A neon lamp (not connected to any electrical source) will light up when held close to a leaky microwave oven door. Other instrument must be used to measure the exact level of radiation. When carrying out these checks be sure to have at least a cup of cold water in the oven. Check to also to see if the door flange and faceplate are free of food spatters. Spills and spatters can build up in these areas and affect the door seal enough to cause leakage. Keeping the oven clean might eliminate the need for a service call.

Another important point to remember is that radiation diminishes by the square of the distance from the source. Leakage of microwave energy from a microwave oven follows this formula too. An oven radiating 10mW/ cm^2 measured two inches from the door will show a reading at 20 inches, about an arms length, of 0.1 mW/cm^2. Using the same formula, if the measurement at the door is 100 mW/cm^2, the level at 20 inches will be only 1 mW/cm^2. When one considers that microwave diathermy treatment of the eye is carried out at levels of over 100 mW/cm^2 with the eye positioned a bare three inches from the device, it is readily apparent that there is little need for concern about hazards of microwave oven use.



MICROWAVE OVEN EMISSION CHECK

Before servicing an operative unit, perform a microwave emission check per the Microwave Measurement Procedure on page 24 of this manual.

If the microwave emissions level is in excess of the specified limit:

1. Instruct the owner not to use the unit, and

2. Immediately contact SHARP ELECTRONICS CORPORATION @ 1-800-237-4277

Should the unit operate with the door open:

1. Instruct the owner not to operate the unit, and

2. Immediately contact SHARP ELECTRONICS CORPORATION and The Food and Drug Administration's Center for Radiological Devices and Radiological health.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of $4mW/cm^2$. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements

1) Microwave leakage limit (power density limit):
The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to the acquisition by a purchaser, and thereafter (through the useful life of the oven), 5mW/cm^2 at any point 5cm or more from the external surface of the oven.

2) Safety Interlock Switches, Primary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of the requirement as above mentioned, secondary interlock switch shall prevent microwave radiation emission in excess of 5mW/cm^2 at any point 5cm or more from the external surface of the oven.

B. **Preparation for testing:**
Before beginning the actual measurement of leakage, proceed as follows:

1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030. 10(c)(3)(i), must be used for testing

2) Place the oven tray in the oven cavity.

3) Place the load of 275 + or - 15 ml (9.8 oz) of tap water initially at 20 + or - (68 degrees F) in the center of the oven cavity. The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3 1/2 in.) and made of an electrically nonconductive material such as glass or plastic. The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.

4) Set the cooking control on Full Power Cooking Mode.

5) Close the door and select a cook cycle of several minutes. If water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage Test

Closed -door leakage test (microwave measurement)

1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.

2) Move the probe slowly, not faster than 1 in/sec (2.5 cm/sec) along the gap, watching for the maximum indication on the meter.

3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg. around the switches, indicator, and vents).
While testing for leakage around the door, pull the door away from the front of the oven as far as is permitted by the closed latch assembly.

4) Measure carefully at the point of highest leakage and make sure the highest leakage is no greater than $4mW/cm^2$ (to allow for meter uncertainty), and that the secondary interlock switch does turn the oven **OFF** before any door movement.

NOTE: After servicing, record data on the service invoice and microwave leakage report.

MAGNETRON SECTION

In order for the service technician to comprehend the service procedures, and their limitations, they must have a understanding of the operation of the magnetron tube. Refer to the next page for the following explanation.

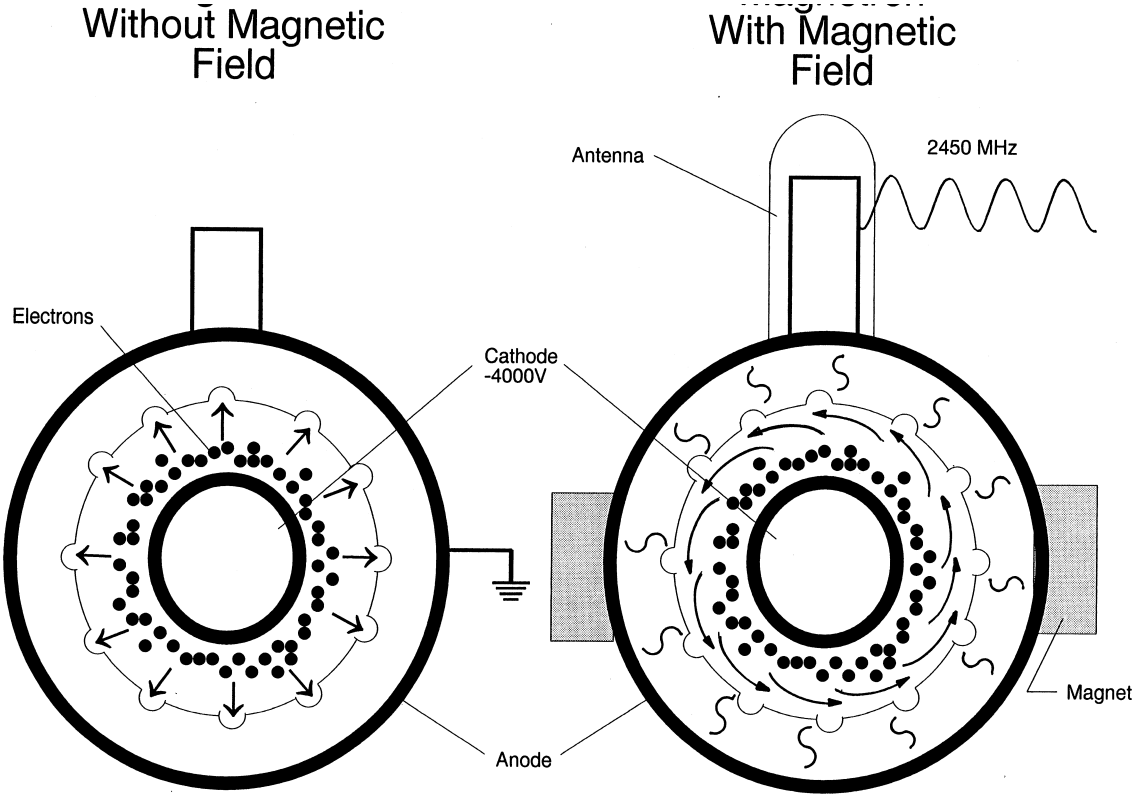
The magnetron is made of a cathode, an anode, and an antenna.

The cathode is made of a substance which will have many free electrons in its molecular structure. Usually this substance is a man made element which combines barium and strontium oxide together. Most manufacturers just refer to the oxide coating on the cathode as "rare earth". The cathode is then encircled with an anode which is constructed to create resonate cavities within its interior. The resonate cavities are then connected to an antenna. The next requirement for manufacturing is to evacuate the air space between the cathode and anode creating a perfect vacuum. A heater is then placed on the cathode which shares one of its terminals with the high voltage lead. Magnets are then placed around the outer side of the anode. The magnetron tube is now ready for operation.

The first requirement for the tube to function requires us to get the free electrons of the rare earth element off the cathode, suspending them in the vacuum around the cathode. This is accomplished by pushing current through the heater which is on the cathode. The current is pushed by a relatively small alternating voltage, usually around 3 volts AC. As the cathode heats the electrons begin moving. Much like water is in solid state (ice) when cold, as heat is applied the molecules will begin movement until they actually leave the mass in the form of steam. We usually refer to the process of electron movement from the cathode to the vacuum area as the boiling off process although the electrons do not experience the change of state which we often relate to when we think of boiling.

The next requirement is to get the electron mass to move away from the cathode with a certain degree of velocity. This is accomplished by putting a high voltage charge on the cathode. The charge is usually about 4000 volts negative, direct current. The anode is then connected directly to ground. The movement of electrons is from negative to positive, the large negative charged electrons see ground as positive which will cause them to accelerate outward toward the anode.

The next step for the tube to operate is the magnetic flux generated from the permanent magnets on the magnetron, which will restrict the electron movement. The electrons can not strike the anode directly, they must move past the resonate cavities of the anode. As the cloud of electrons pass a cavity they will create movement of the electrons within the anode material (usually a copper alloy).


Without Magnetic Field
With Magnetic Field
Antenna
2450 MHz
Electrons
Cathode
-4000V
Magnet
Anode

The resonate cavities are so designed that the movement of electrons will be only allowed at the frequency of 2450 MHz. The positive and negative fields created as the cloud passes one cavity to another will create the pushing and pulling of the electrons all the way to the antenna. As the antenna gets moving within, it will generate electro-magnetic energy, at the frequency of 2450 MHz. This is the RF energy that is used by microwave ovens.

A symptom of a failed magnetron is a no heat complaint. After confirming the power supply has not failed, unplug the unit and remove the wires from the terminals of the magnetron. With an ohmmeter check the resistance of the heater on the cathode. The reading should be about .25 Ohms. If the resistance is infinite the heater is open. This of course would not allow the electrons to boil off the cathode surface. Without the cloud of electrons in the vacuum area the tube can not generate energy within the resonate cavities. The magnetron would have to be replaced to correct the problem.

Next, with an ohmmeter check from the magnetron terminals to the case of the magnetron. An infinite reading would indicate the tube does not have a cathode to anode short. If a short existed between the cathode to anode the electrons would go directly to ground, taking the path of least resistance. This of course would again mean the cloud of electrons needed within the tube was not present and the tube would not generate energy. Any resistance reading at this point would warrant replacement of the magnetron.

The last test that can be taken on the magnetron is a visual check. Check the magnetic rings that are around the anode for a break. If the magnets are broken they will prevent the spherical movement of electrons in the vacuum area of the tube. All the electrons will align themselves up to a North Pole that was developed at the break. Again without the movement of the clouds of electrons past the resonate cavities, the tube will not generate energy. The magnetron tube would have to be replaced.

Some failures within the magnetron can not be detected with the use of meters or visual inspections. These types of failures must be diagnosed via process of elimination. Check all other possible causes for the tube not to operate, if no other reason is detected, replace the magnetron. An example of this type of failure would be a gassy tube. This condition occurs when the vacuum is lost within the tube. The introduction of various gasses will cause friction due to the electrons hitting the electrons from the alien gasses. The heat generated from these collisions will super heat the cathode causing deterioration of the cathode. The tube will first emit too much power and the customer will complain of food over cooking. Then it will very quickly reverse symptoms and have low or no output. This condition of extra heat is usually the reason why the magnets will crack.

Another failure that can not be easily detected is the weak magnetron. After years of operation the amount of electrons that the cathode can release is reduced. The charge that is carried in the cloud of electrons is diminished and the amount of energy transferred to the resonate cavities is also reduced. This failure can not be avoided and is in proportion to the amount of time the oven is used. To detect a weak magnetron a running wattage test must be taken.

During the 1990 product year the microwave industry standardized the rating specifications for output power. The ovens prior to 1990 used the 2-liter water load rating standard . Ovens during 1990 used both the 2-liter method and the new IEC-705 test procedure. When you troubleshoot an oven and suspect the magnetron has low output make sure you check the method used to initially rate the oven. If you use the 2-liter method on an oven which was initially rated by the IEC-705 method the output will be drastically lower. This of course would cause you to replace the magnetron and incorrectly diagnose the trouble.

Due to the complex formula and the precision required to successfully check the output, we recommend you use the following guidelines for testing a suspected weak magnetron.

Power output of the magnetron can be determined by performing a water temperature rise test. This test should only be used if the circuits check good in all the prior ohmmeter tests. This test requires a 16-ounce cup and an accurate mercury thermometer. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 ounces of tap water and measure the temperature of the water with the thermometer. Stir the thermometer through the water until the temperature stabilizes. Record the temperature of the water.

2. Place the cup of water in the oven, selecting more than 60 seconds of cooking time. Allow the water to heat for 60 seconds, measuring the time with a stopwatch, second hand, or digital read out countdown.

3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer through the water until maximum temperature is reached.

4. Subtract the cold water temperature from the hot water temperature. The normal result should be:

   15-28 degrees Fahrenheit if testing a 600 watt oven
   18-33 degrees Fahrenheit if testing a 700 watt oven
   21-39 degrees Fahrenheit if testing a 850 watt oven
   22-43 degrees Fahrenheit if testing a 900 watt oven
   27.7-51.5 degrees Fahrenheit if testing a 950 watt oven
   34.7-64.6 degrees Fahrenheit if testing a 1000 watt oven
   32.6-64.6 degrees Fahrenheit if testing a 1100 watt oven

If the water temperatures are accurately measured and tested for the required time period, the tests results will indicate if the magnetron tube has low power output (low rise in water temperature), which would extend the cooking time, or a high power output (high rise in water temperature), which would decrease the cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube should not be replaced unless the water temperature rise test indicates a power output well above or below the normal limits.

Test results are only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.

HIGH VOLTAGE SECTION

The high voltage section of the microwave oven is the section responsible for developing the voltages required by the magnetron. These voltages are the 3 volts AC and the -4000 volts DC. Refer to the graphic on page 29 for the following explanation.

The voltage induction principle of a transformer is used to develop the volts from the 120 volt supply. The 3 volts AC is developed on the voltage step down winding which steps the voltage down by a 40 to 1 ratio. For every 40 volts applied to the primary winding we will get 1 volt on the secondary of the step down winding. This winding is often referred to as the filament winding. Due to the induction principle the output of the transformer must be alternating voltage (AC). This voltage is applied directly across the heating element that heats the cathode surface of the magnetron.

The -4000 volts required to charge the electrons within the magnetron's vacuum space is developed on the step up winding. This winding steps the voltage up on a ratio of 1 to 20. For every 1 volt applied to the primary winding, 20 volts will be developed on the secondary. On a unit that has 120 volts applied to the primary the output on the high voltage winding will be about 2400 volts AC. This voltage must now be rectified (converted into DC voltage) and increased. This is accomplished with the use of a silicon rectifier and a capacitor. As the transformer makes its positive and negative swings along the sine wave, the rectifier will conduct only during the negative swing. During this period of time the rectifier will totally shunt the magnetron and charge the capacitor. During the positive swing the rectifier will not conduct. This will now give us the 2400 volt potential within the secondary winding along with the 2400 volts stored in the capacitor. The voltage is in series aiding which gives the 4800 volt potential available for the magnetron.

The voltages referred to in our explanation are not real voltages that you would measure on a working microwave. In practice the voltages may be lower and will vary from model to model. The transformer secondary windings are matched to an output rating of the magnetron. The size of the capacitor is also matched to the magnetron and transformer output. The rectifier is current rated for the individual circuit it is used in. Never replace a rectifier, capacitor, transformer, or magnetron with a generic part. You can compromise the circuit operation and reliability of the unit.

If you suspect a problem in the magnetron power supply the following test procedure should be used.

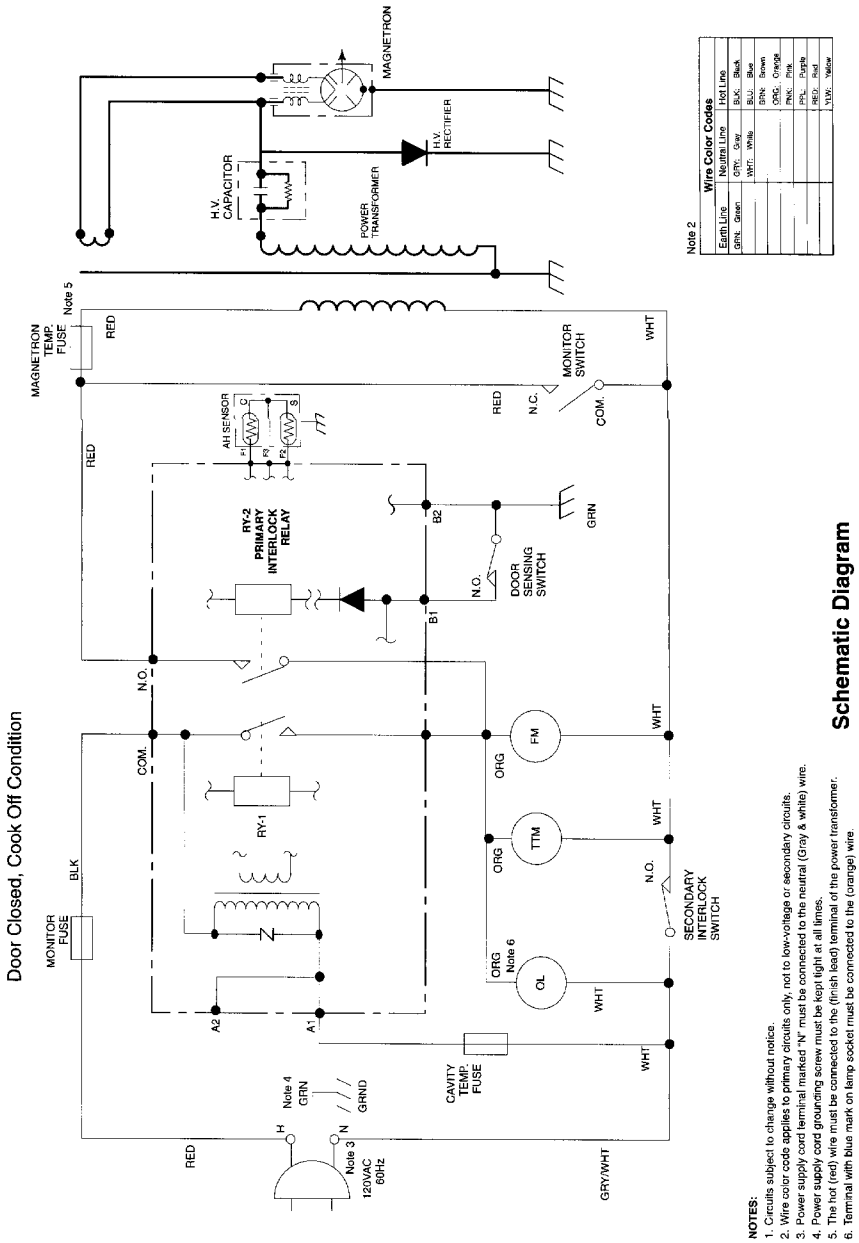
Disconnect the 120 volt power source from the oven (unplug the unit). Discharge the capacitor. A capacitor is nothing more than a storage device for electricity. Even with the power disconnected the capacitor can hold a charge of around 2000 volts. This voltage must be discharged to render the unit safe to work on. To discharge the capacitor, short across the terminals. An arc may occur when the terminals are shorted. This would be a normal situation.

With an ohmmeter, check the resistance of the primary winding. A normal reading would be less than one ohm. This reading is hard to detect on an analog meter as the needle appears to indicate a short. However, if the reading looks close to the shorted condition and the line fuse is not blown the winding is probably good. Of course, any time resistance checks are being taken, the component should be isolated (wires removed from terminals). This prevents the possibility of putting other resistance's in parallel with the component. giving false readings. The secondary is also checked with an ohmmeter. The filament winding should indicate less than one ohm. The high voltage winding should indicate anywhere from 50 to 200 ohms depending on the output rating of the model oven you are checking. Be certain to refer to the service manual for the exact ohm reading on the high voltage secondary as layer shorts are the most common problem with power transformers (the winding reads 90 ohms on your meter but the service manual states the reading should be 120 ohms, this is a layer short).

The rectifier is also checked with an ohmmeter. Set the analog meter on the X 10,000 scale. Place the negative lead of the meter on the cathode of the rectifier (the cathode is the side to which the arrowhead points toward). A reading of 50,000 ohms is normal. If an infinite reading or a low resistance reading is indicated the rectifier is defective. Reverse the leads of the ohmmeter on the rectifier terminals (the negative lead on the anode). This should indicate an infinite reading on the meter, any other reading would indicate a defective rectifier.

The capacitor is also checked with an ohmmeter. Isolate the capacitor and place the meter leads on the leads of the capacitor. With the meter set on the X 10,000 scale, the needle should swing towards a lower resistance reading. As the capacitor charges the resistance should increase to an infinite reading. Reverse the meter leads and the same deflection should occur as the capacitor now charges with the reverse polarity. If the meter indicates a constant resistance the capacitor is shorted or leaky. If deflection is not present it indicates the capacitor is open.

If the transformer, rectifier, and capacitor check good refer to the magnetron section of this manual for test procedure.



Schematic Diagram

NOTES:
1. Circuits subject to change without notice.
2. Wire color code applies to primary circuits only, not to low-voltage or secondary circuits.
3. Power supply cord terminal marked 'N' must be connected to the neutral (Gray & white) wire.
4. Power supply cord grounding screw must be kept tight at all times.
5. The hot (red) wire must be connected to the (finish lead) terminal of the power transformer.
6. Terminal with blue mark on lamp socket must be connected to the (orange) wire.

CONTROL SECTION

The controls which are used in microwave ovens vary from oven to oven.

The mechanical timer control is used in models R-200BK, R-200BW, R-300BW and the R-21HC. Refer to the wiring diagram section of this manual for the following description.

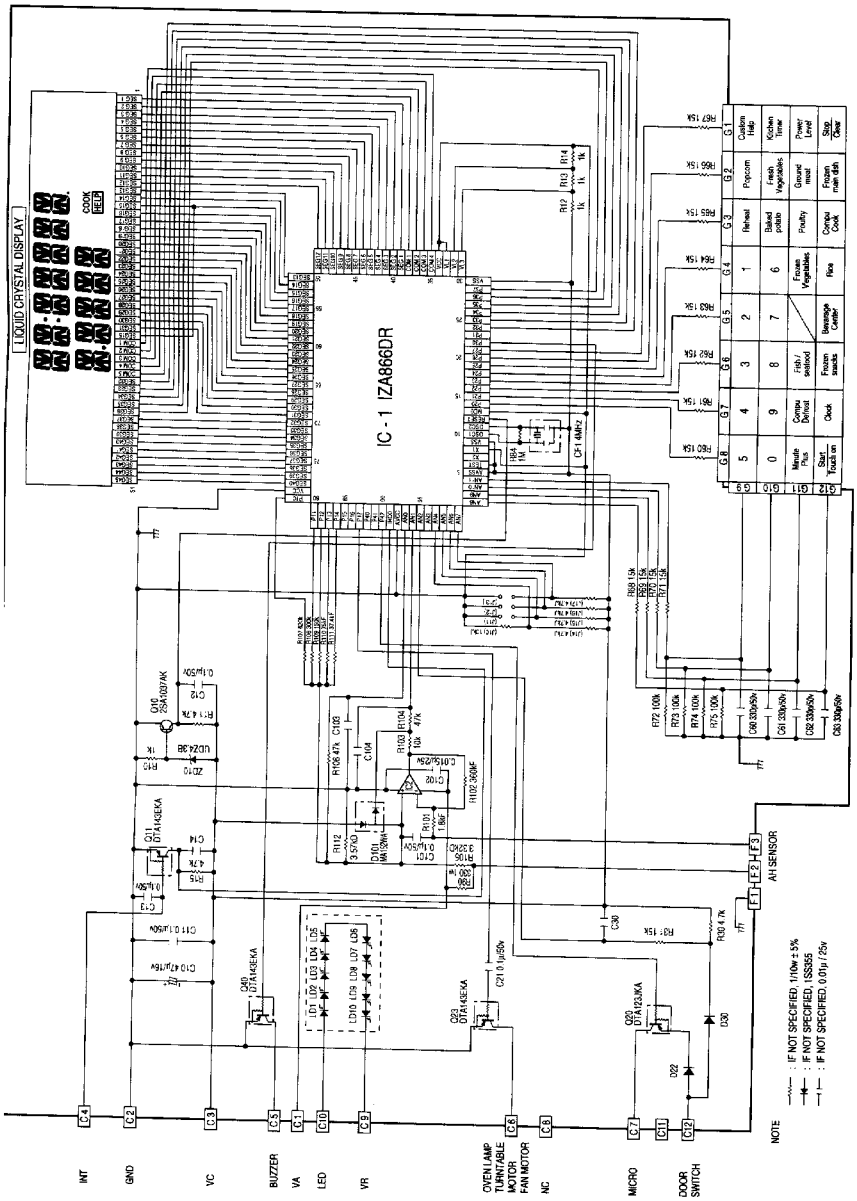
The mechanical timer has two basic designs. The first is a simple motor and a single switch. The timer dial, when turned, will cause the contacts of the timer switch to close. As the switch contacts close they will complete the parallel circuit to the oven light, fan motor, turn table motor, timer motor, and power transformer. Once the motor starts to turn it will continue until it mechanically opens the timer switch contacts. This will open the parallel circuit terminating all oven functions.

To diagnose the mechanical timer, unplug the unit, disconnect the power supply and check continuity across the switch contacts. When the timer is in the off position an infinite reading should be indicated on the meter. When the dial timer is turned to any on position, zero ohms or continuity should be indicated. If the timer switch checks good, restore power to the unit and turn the timer dial to close the switch contacts. With a volt meter check for 120 volts across the motor terminals directly. A reading of 120 volts should be indicated. If the voltage is present but the timer doesn't operate, replace the timer.

The second mechanical timer design has a second switch for the defrost function. The switch is normally opened and closed by a cam that turns within the timer assembly. The switch is located in series with the power transformer, therefore only affecting the transformer operation as it opens and closes.

To diagnose the switch the oven must be operating. A voltage check across the defrost switch must be taken. When the meter indicates 120 volts the switch is open. When the meter indicates zero volts the switch is closed. If the meter fails to detect the switch either opening or closing, replace the switch and/or the timer assembly depending on the reason for the failure of the switch activation.

All other ovens utilize a solid state control. The control is an assembly which is comprised of a key unit and a control unit. Refer to the Control Panel Circuit Operation on the next page for the following explanation.


LIQUID CRYSTAL DISPLAY
IC - 1 IZA866DR
Control Panel Circuit
INT
GND
VC
BUZZER
VA
LED
VR
OVEN LAMP
TURNTABLE
MOTOR
FAN MOTOR
NC
MICRO
DOOR
SWITCH
AH SENSOR
NOTE

Control Panel Circuit

The key unit is a switching device. When a keypad is touched it will momentarily switch an output signal from the microcontroller to the input ports of that same microcontroller. The door sensing switch must be closed and working properly, as this switch is responsible for enabling the input section of the microcontroller. The input command will be recognized by the ROM section of the microcontroller and the desired command will be executed.

To diagnose a failure in the key unit, disconnect the mylar ribbon connector between the key unit and the control unit. With a small diameter solid wire, jump across the key function which has the suspected failure. As an example, if an R-530BK will not clear the display from the initial "flashing 8" condition, disconnect the ribbon connector and insert the jumper wire on the control board connector at G1 and G12 (see page 33 for layout of Key Unit for the R-530BK/BW). Of course the door must be closed and the door sensing switch must be operating properly before this test can be made. If a beep is heard and the display clears, the problem would be in the key unit. If the control does not respond when the jumper connection is made the problem is in the control unit. Any pad on the key unit can be tested in this same manner. However, keep in mind the microcontroller is sequentially programmed. This means certain commands must be entered ahead of others. As an example, the control must first be cleared, the clock set, cooking time entered, and the start key touched. If we try to start the unit before time is entered, the control will not respond.

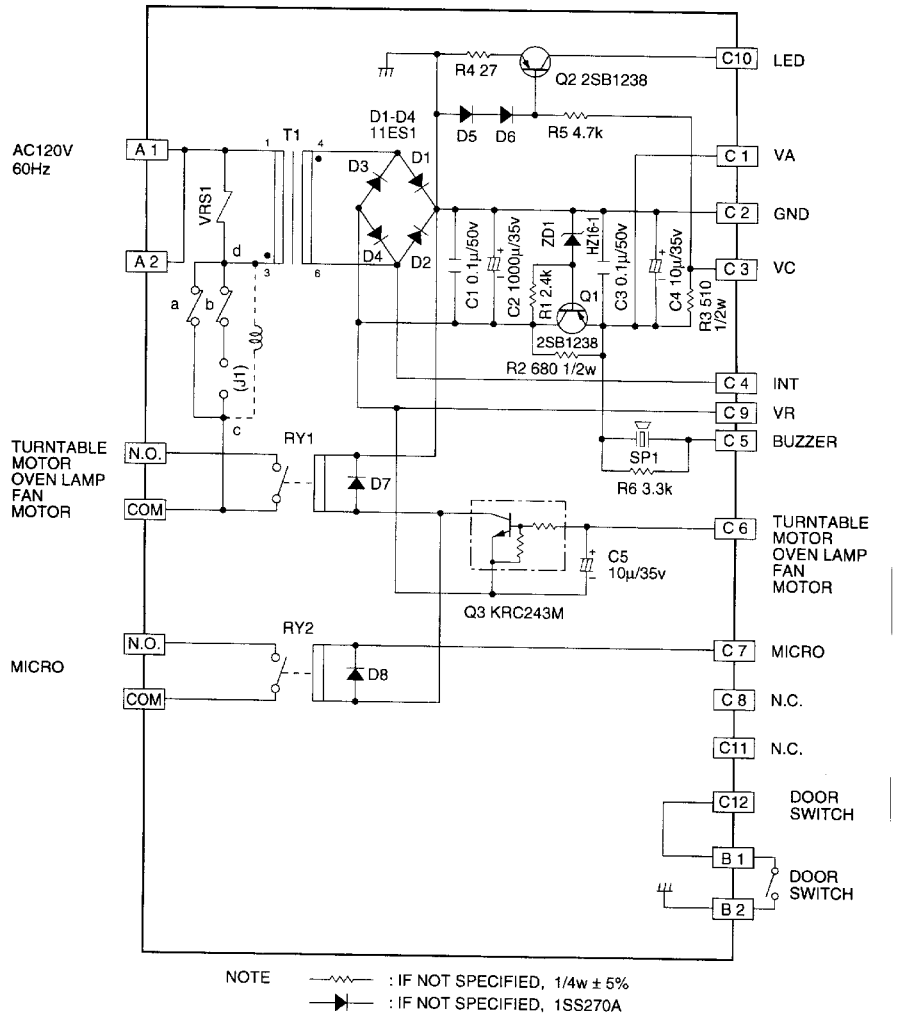
To diagnose a failure in the control unit, place a voltmeter across the power input terminals. Refer to the power unit circuit on page 34, model R-530BK. As an example, if the display is dead and the control will not accept commands from the key unit proceed as follows. Place a voltmeter across terminals A-1 and Common on the Power Unit Circuit Board. 120 volts should be indicated on the meter. If zero volts is indicated, the problem is in the circuitry ahead of the control assembly such as an open monitor fuse. Do not condemn the control if this condition exists. If 120 volts is indicated across A-1 and Common further testing is required. With a voltmeter, check across the primary windings of the low voltage transformer "T1". The meter should indicate 120 volts. If the voltage is present, the control is not accepting commands, and the display is dead, replace the control assembly. If the meter indicates zero volts across the primary winding of the transformer "T1" but 120 volts was indicated across A-1 and Common, check the foil pattern between the two test points. When you locate the open foil proceed with the repair procedure on page 35.

Control assemblies for microwave ovens are considered as a replaceable part once the foil pattern repair is checked.

THIS PROCEDURE MUST BE FOLLOWED PRIOR TO CONDEMNING A CONTROL ASSEMBLY ON ALL THE SOLID STATE CONTROLS FOR THIS PRODUCT YEAR.

KEY UNIT FOR THE R-530BK/BW

	G8	G7	G6	G5	G4	G3	G2	G1
G9	**5**	**4**	**3**	**2**	**1**	Reheat	Popcorn	Custom Help
G10	**0**	**9**	**8**	**7**	**6**	Baked Potato	Fresh vegetables	Kitchen Timer
G11	Minute Plus	Compu Defrost	Fish / seafood		Frozen vegetables	Poultry	Ground meat	Power Level
G12	Start Touch on	Clock	Frozen snacks	Beverage center	Rice	Compu Cook	Frozen main dish	Stop Clear



Power Unit Circuit

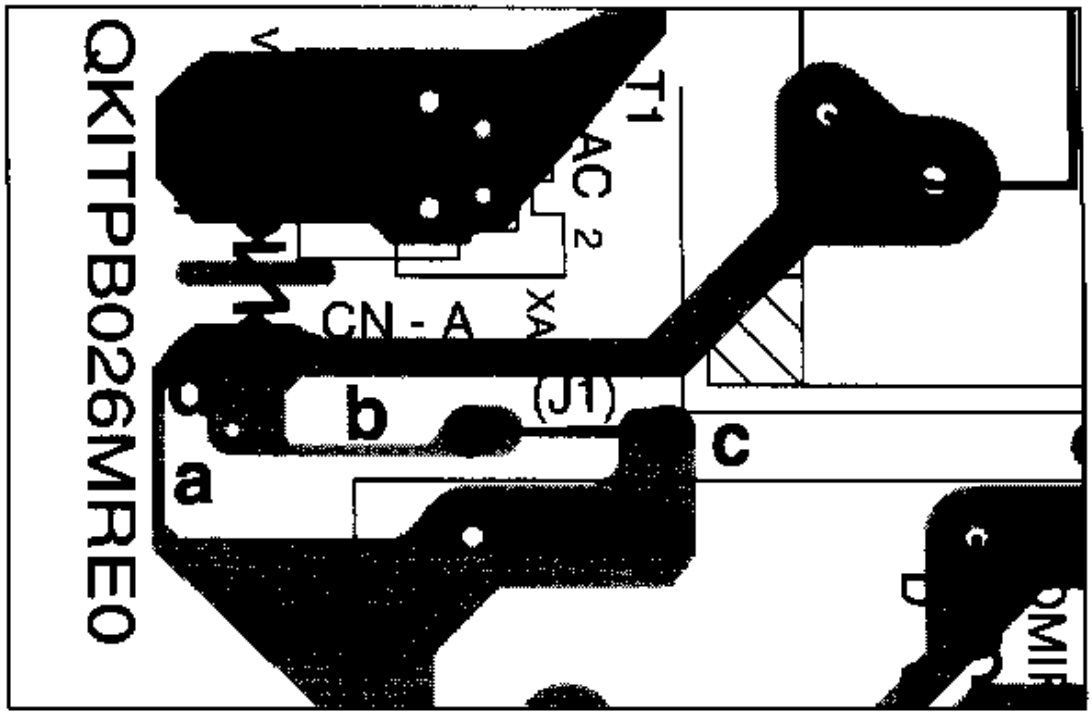
Procedure for repairing an open foil pattern

To protect the electronic circuits, microwave ovens are provided with a fine foil pattern in the primary circuit that acts as a fuse. If the foil pattern is open, follow the troubleshooting procedure as outlined below.

Problem: Power ON, Indicator does not light.

Step	Occurrence	Cause or Correction
1.	Only pattern “a” is broken	Insert jumper wire J1 and solder. (see page 37)
2.	Patterns “a” and “b” are broken	Insert coil RCILF2003YAZZ between “c” and “d”.

NOTE: At the time of this repair, make a visual inspection of the varistor for burn damage, and test the transformer with an ohmmeter for the presence of a layer short.



On models which have the liquid crystal display, be sure to check the flex connector between the display and control board. The conductor strip on the board as well as the flex connector must be clean. Any substance, such as grease or dirt, would cause resistance to current flow between these parts and impede the operation of the display. Clean this area with a residue free cleaning agent such as ethyl alcohol. Also inspect the control for a crack or break in the area where the mounting screws hold the assembly into the frame. If the contact between the board and flex connector is not tight the display will not function or will function erratically.

The function of audible signal elimination, will allow the consumer to turn off the buzzer. The Demonstration mode, will allow the consumer to run through a cooking sequence at ten times the normal speed without turning on the power circuits. The Child lock, will allow the consumer to disable their control panel to prevent unwanted oven operation

Refer to the "owners guide", not the service manual, for the specific model you are working on to determine what features the unit has and the correct procedure used to activate and deactivate the feature.

Child Lock

The Child Lock prevents unwanted oven operation such as by small children.
The oven can be set so that the control panel is deactivated or locked.
Should a pad be touched, Lock On will appear in the display.

Audible Signal Elimination

Eliminates the audible signal when any of the pads are pressed.

Demonstration Mode

The consumer can use the demonstration mode to demonstrate different features without power being applied to the high voltage section.

NOTE: Refer to the owners manual for the model you are working on for the correct procedure to activate and deactivate the above feature.

SENSOR CIRCUITS

Sensors used in microwave ovens are considered peripherals of the control assembly. They are responsible for sending information back to the microcontroller, which in turn sets the conditions for the microcontroller to turn power on or off to the select circuits. The following is a list of sensors used.

Door Sensing and Secondary Interlock Switches:
The secondary interlock switch is mounted in the lower position of the latch hook and the door sensing switch in the primary interlock system is mounted in the upper position of the latch hook. They are activated by the latch heads on the door. When the door is opened, the switches interrupt the power to all high voltage components. A cook cycle cannot take place until the door is firmly closed thereby activating both interlock switches. The primary interlock system consists of the door sensing switch and primary interlock relay located on the control circuit board.

Thermal Cut-Out (Magnetron):
This thermal cut-out protects the magnetron against overheating. If the temperature goes up higher than 257 degrees F (R-820BK/BW) because the fan motor is interrupted or the ventilation openings are blocked, the thermal cut-out will open and line voltages to the high voltage transformer will be cut off and the operation of the magnetron will be stopped. The thermal cut-out will not resume.

Thermal Cut-Out (Oven):
The thermal cut-out located on the top of the oven cavity is designed to prevent damage to the oven if the food in the oven catches fire due to over heating produced by improper setting of the cooking time. Under the normal operation, the oven thermal cut-out remains closed. However, when abnormally high temperatures are reached within the oven cavity, the oven thermal cut-out will open at 338 degrees F (R-820BK/BW) causing the oven to shut down. The thermal cut-out will close in at 311 degrees F (R-820BK/BW).

Absolute humidity sensor (AH sensor):
This sensor detects humidity or steam generated from the food load. The microcontroller monitors voltage across two thermistors. One thermistor is in a sealed chamber and the other is open to air. This sensor is located in the rear exhaust vent and relies on the venting system of the oven to blow air across it. As humidity builds up on the sensor in the open air, it will begin to evaporate, which cools the thermistor. When a voltage difference is developed across the two thermistors, the microcontroller will calculate the remainder of the cooking time. Refer to pages 39-41 for proper test procedures.

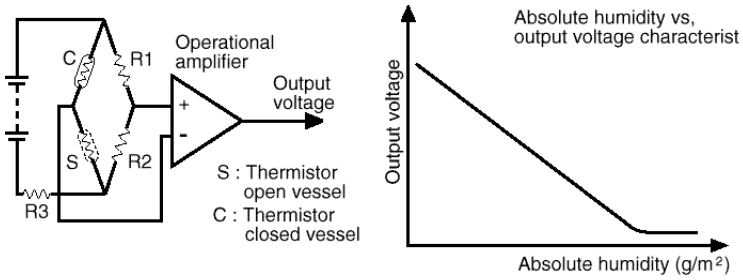
Oven temperature thermistor:
This sensor is used in ovens that have convection heat, The thermistor will change resistance as the oven temperature increases. The microcontroller will compare the voltage across the thermistor to the programmed voltage within the ROM. When the two are equal, the convection heater will be turned off. Refer to page 42 for the proper test procedure.

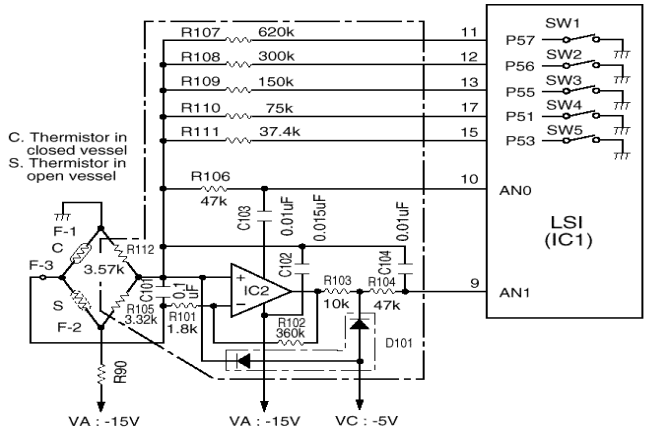
Damper switch:
This sensor monitors the position of the damper door on ovens that have the convection cooking feature. The damper door must be closed for convection cooking and open for the microwave mode. A signal is developed across the damper switch that is converted to either a logic high (when the switch is open) or a logic low (when the switch is closed). Refer to the convection oven section of this manual for more information on this component.

AH Sensor Test

Checking the initial sensor cooking condition:

1. The oven should be plugged in 5 minutes (R-530BK/BW) prior to sensor cooking.
2. Room temperature should not exceed 95 degrees F (35 degrees C).
3. The unit should not be installed in an area where heat and steam are generated.
4. Exhaust vents are provided on the back of the unit, do not block these vents, space is needed for air circulation.
5. Be sure the exterior of the cooking container and the interior of the oven cavity are dry. Wipe off any moisture with a dry cloth.
6. The sensor works with food at normal storage temperatures. Example: chicken should be at refrigerator temperature, canned soup should be at room temperature when cooking cycles are started.
7. Avoid using aerosol or cleaning solvents during the test as the sensor will detect the vapor and turn off the oven before the food is properly cooked.
8. If the sensor has not detected any vapor from the food load after 30 minutes, "ERROR" will appear in the display and the oven will shut off.





Testing method for the AH Sensor

To determine if the sensor is defective, the simplest method is to replace it with a new sensor.

1. Disconnect the oven from the power line and remove the outer cabinet.
2. Discharge the high voltage capacitor.
3. Remove the AH sensor.
4. Install the new AH sensor.
5. Re-install the outer cabinet

a) Fill approx. 200 milliliters (7.2 oz) of tap water in a1000 milliliter measuring cup.
b) Place the container on the center of tray in the oven cavity.
c) Close the door.
d) Touch reheat pad once and touch the Start pad.
e) The control panel is in automatic Sensor operation.
f) The display will start to count down the remaining cooking time, and the oven will turn off automatically after the water is boiling.

If new sensor does not operate properly, the problem is with the control unit.

Water load cooking test

Oven must be plugged in at least 5 minutes (R-530BK) prior to the test. The cabinet must be installed and all screws must be tightened.

1. Place approx. 200 milliliters (7.2 oz) of tap water in a1000 milliliter cup.
2. Place the cup in the center of the oven cavity.
3. Close the door.
4. Touch Reheat pad once and touch the Start pad. Now the oven is in sensor cooking condition and "REHEAT" "SENSOR" and "COOK" will appear in the display.
5. The oven will operate for the first 16 seconds, without generating microwave energy.
6. **NOTE**: ERROR will appear if the door is opened or STOP/CLEAR pad is touched during first stage of sensor cooking

After approximately 16 seconds, microwave energy is produced, and the display should start to count down the remaining cooking time and the oven should turn off after water is boiling. If the oven does not turn off, replace or check AH sensor or check the control unit.

Thermistor Test

1. Disconnect the power supply cord and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect connector-D from the control unit. Measure the resistance of the thermistor with an ohmmeter. Connect the ohmmeter leads to Pin #'s D1 and D3.

Room Temperature	Resistance
68 degrees F - 86 degrees F	Approx. 293k ohms - 184k ohms

5. If the meter does not indicate above resistance, replace the thermistor.
6. Reconnect all leads removed from components during testing.
7. Reinstall outer case cabinet.

CONVECTION CIRCUITS

The R-820BK/BW combines the microwave and convection cooking modes together.

The convection process requires air to be circulated around a heater within an enclosed oven cavity. When the food load is placed within the confines of the cavity, it will also be subjected to the circulating hot air. This will cause the food load to be cooked more evenly, quicker, and retain the foods natural juices better than the conventional radiant method.

The cavity for a micro/convection oven differs from the straight microwave oven. The cavity must be insulated to retain the hot air within. A heat chamber is added which includes the heating element, a thermistor to detect oven temperature, and a convection fan assembly. The cavity must also have a means to block the vent system, which is used to vent the oven cavity while in the microwave mode. The means to do this is a damper door and switch assembly. The damper assembly is not used in the R-820BK/BW. However, the damper assembly is explained so the technician will become familiar with it.

When the convection mode is selected, the microcontroller will close relays to the heating element, convection fan, and oven light. The microcontroller will also monitor the voltage and/or logic levels on the pins leading to the damper switch and oven thermistor. If the damper switch does not go to the proper logic level for the mode selected (high for microwave cooking and low for convection cooking) within a specified time the oven will shut down. If the oven does not detect a voltage change across the oven thermistor within a specified time the oven will again shut down. These two features are designed safety features within the microcontroller. Refer to page 45 for a detailed explanation of the damper assembly.

As the oven continues to operate in the convection mode, the air temperature increases. The oven thermistor, which has a negative temperature coefficient, will decrease in resistance. This will cause the voltage being monitored by the microcontroller to decrease, cycling the relay to the heating element. As the oven cavity cools the thermistor will also cool. This will increase the temperature going to the microcontroller and cycle the relay back on. This cycling will continue throughout the programmed cooking time.

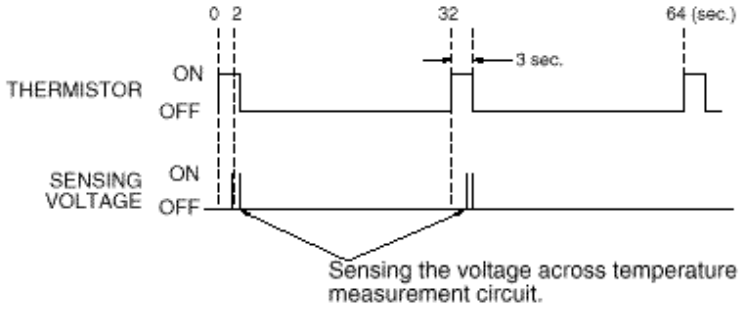
To check the temperature circuit several factors must be considered. Due to the fact that the air flow pattern is a recirculating system, the heater assembly must remain fairly airtight. If cool room air is allowed to enter the air flow system, the oven temperature will always be low and take a long time to reach preheat conditions. Check for air gaps in the area around the heater box and also by the damper door assembly.

Another factor which will affect the temperature circuit is the line voltage. If the voltage is decreased the wattage output of the heating element will also be decreased.

Fire Sensing Feature (Microwave Mode)
The model R-820BK/BW incorporates a sensing feature which will stop the oven's operation if there is a fire in the oven cavity during microwave cooking.

This is accomplished by the LSI repeatedly measuring the voltage across the temperature measurement circuit (thermistor) during it's 32-seconds time base comparing the obtained voltage measurements. If the most recent voltage measured is 700mV greater than the previous voltage measured, the LSI judges it as a fire in the oven cavity and switches off the relays to the power transformer, fan motor, oven lamp and turntable motor. The LSI also stops counting down. Please refer to the following section for a more detailed description.

Operation
Please refer to the timing diagrams below
1. The thermistor operates within a 32-seconds time base and it is energized for three (3) seconds and off for 29 seconds. Two (2) seconds after the thermistor is energized, the voltage across the temperature measurement circuit is sampled by the LSI and twenty one (21) seconds after the thermistor is cut off the LSI turns on the cooling fan for six (6) seconds.
2. The above procedure is repeated.. If the difference between the first voltage measured (in step 1) and the voltage measured when the procedure is repeated (step 2) is greater than 700mV the LSI makes the judgement that there is a fire in the oven cavity and will switch off the relays to the power transformer, fan motor, oven lamp and turntable motor. The LSI also stops counting down.
3. Once the fire sensor feature has shut the unit down, the programmed cooking cycle may be resumed by pressing the "START" pad or the unit may be reset by pressing the "CLEAR" pad.



Damper Open-Close Mechanism

Below is a description of the Damper -Close Mechanism that is used in some convection microwave ovens.

The Damper is usually open except during convection cooking. The Damper position is set automatically by the damper motor, motor cam, and damper shaft. These components are operated by a signal that is determined by whether microwave or convection cooking has been selected at the control unit.

Microwave

The damper is in the open position because a portion of the cooling air is channeled through the cavity to remove steam and vapors given off by heating foods. It is then exhausted at the top of the oven cavity into a condensation compartment.

Convection Cooking

The damper is closed preventing hot air from escaping the oven cavity.

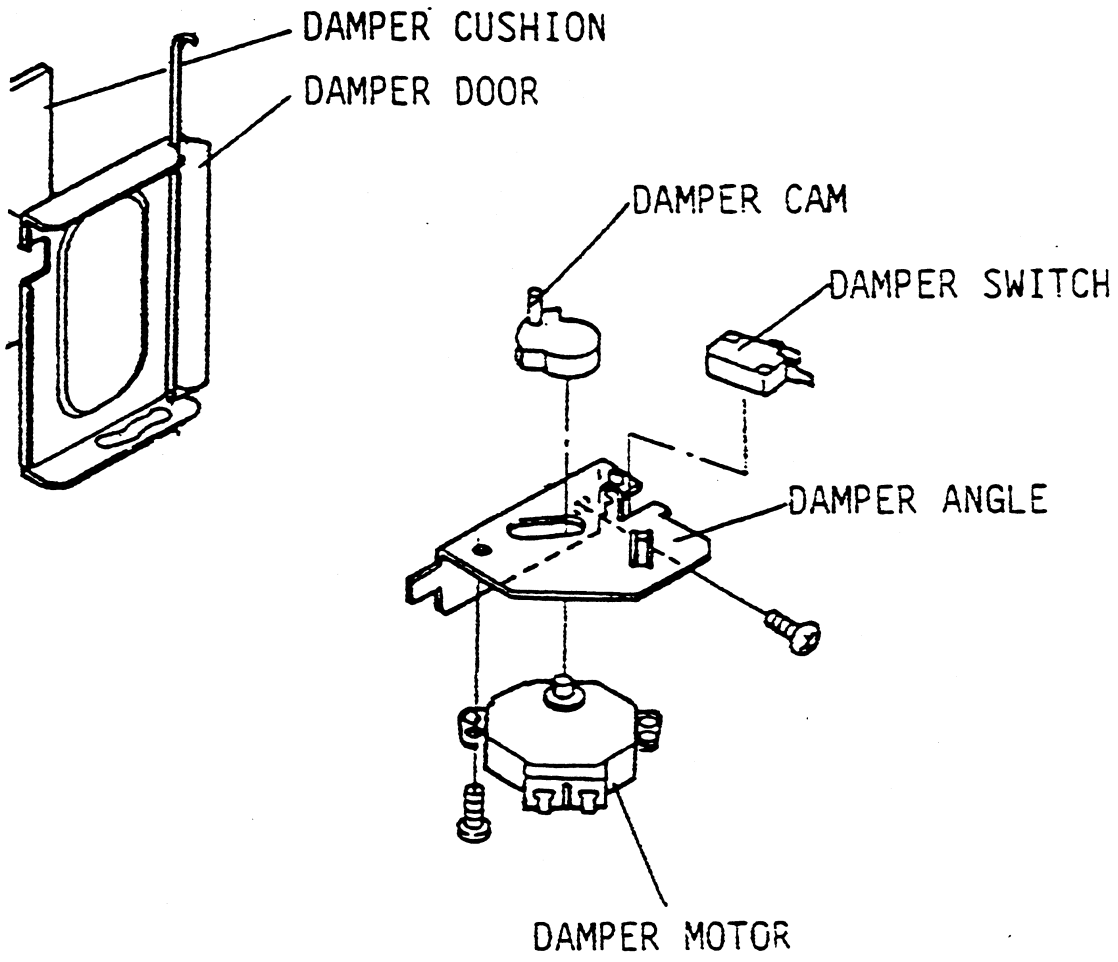
Damper Operation

1. When power is applied:
    - 1.1 A signal is sensed in the control unit, operating the shut-off relay.
    - 1.2 Contacts of the shut -off relay close, damper motor energizes, damper door opens.
    - 1.3 When damper door is moved to open position by damper cam, damper switch is closed (ON Position).
    - 1.4 The signal from the damper switch is re-sensed by the control unit, and the shut-off relay is turned off.
    - 1.5 The 120 volts to the motor is shut off.

2. When the oven is cooking in the microwave mode, the damper is in the open position.

3. When the oven is in the convection mode:
    - 3.1 The damper is energized by touching the convection, temperature, and start pads.
    - 3.2 When the damper is in the closed position (damper switch OFF), it's signal is sensed by the control unit and the shut off relay is de-energized.
    - 3.3 The damper is held in the closed position during convection cooking.
    - 3.4 At the end of the convection cook cycle, the shut relay is energized and the damper returns to the open position.

NOTE: If the damper door is not in the proper position (Open for microwave cooking, closed for convection cooking), the control unit stops oven operation after 1 minute.

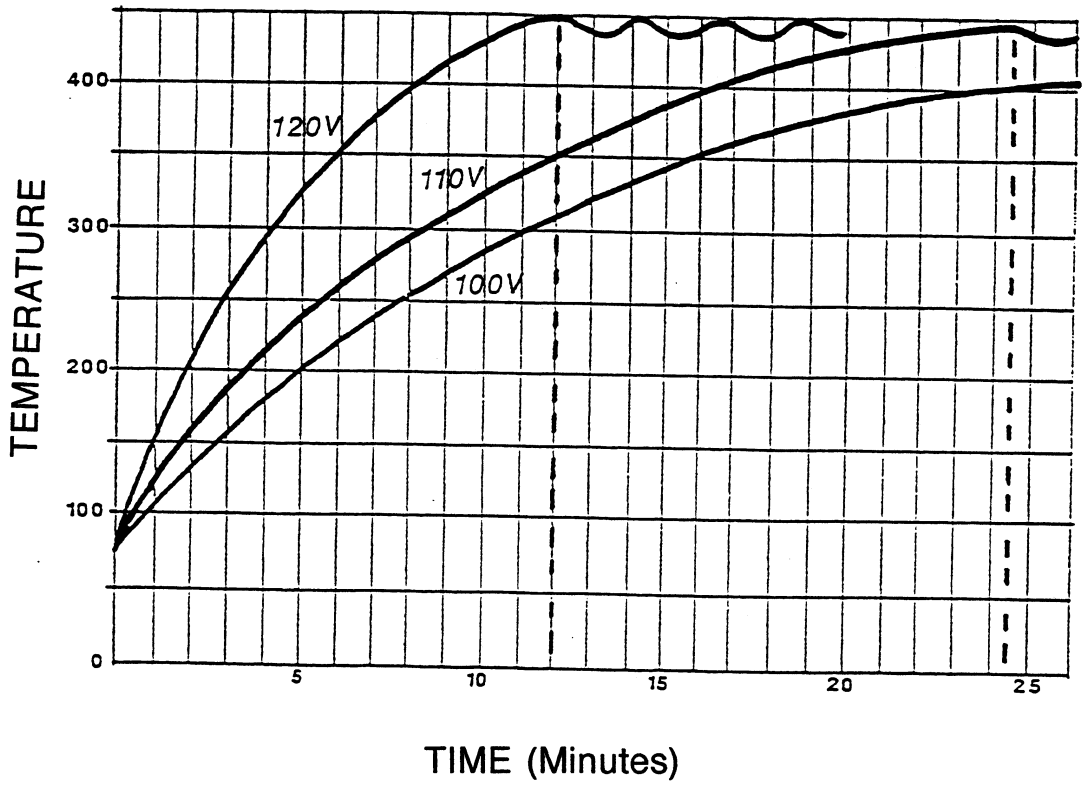

DAMPER CUSHION
DAMPER DOOR
DAMPER CAM
DAMPER SWITCH
DAMPER ANGLE
DAMPER MOTOR

Checking Temperature in the Convection Mode

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted).

It is difficult to measure the exact temperature in the convection oven. An accurate thermocouple type temperature tester must be used. A low priced bi-metal thermometer is not reliable or accurate. The temperature should be checked with the outer case cabinet installed, approximately 5 minutes after preheat temperature is reached (audible signal sounds four times). The temperature experienced may be approximately 30 degrees F more or less than indicated on the display, however, in most cases the food cooking results will be satisfactory.

Difference in power supply voltages will also affect the oven temperature. The household power supply voltage may sometimes become lower than the rated (120V) and cause under-cooking. If the power supply voltage is 10% lower than the rated voltage, longer cooking time is required by 10% to 20%.



PROTECTION CIRCUITS

Several protection circuits are used in microwave ovens. Besides the sensor shut down circuits mentioned previously, monitor switches and temperature fuses are also used.

The monitor switch circuit is designed to prevent the oven from energizing any circuit of the oven while the door is open. It is also designed to immediately interrupt all circuits if the door opens while the oven is in operating mode. The circuit contains a combination of two switches and a relay on the control assembly. In the models that have mechanical timers, a three switch combination is used.

The mechanical timer ovens have the three switches mounted on the door latch assembly. The primary switch monitors the hot side of the power line while the secondary switch monitors the neutral side. These switches are both normally open switches and will close when the door latch hook energizes them. The monitor switch is a normally closed switch and will open when the door latch energizes it. When the door is closed, the switches must be so aligned that the monitor switch is energized first. Now that the monitor switch is open the primary and secondary switches can close allowing current to pass to the remaining circuits of the oven. If the switches are out of alignment or a mechanical problem exists with the door, the monitor switch will remain in the normally close position. When the primary and secondary switches close, a dead short will be placed across the line via the three switches. This, of course, will result in the monitor fuse opening. If the monitor fuse is open due to a failure in the door switches, it is recommended that all three switches be replaced. This is due to the amount of current that will pass through the switch. Even though the amount of time that the current passes through the switch contact can be measured in microseconds, it is enough time to do permanent damage to the switch contacts.

Ovens that use the solid state controls have two switches and a relay for the protect circuit. While the monitor and secondary switch function the same as in mechanical timer models, the primary switch has been replaced by the primary interlock relay. The interlock relay has the same function as the primary switch. This relay is activated by the door sensing switch and again controlled by the door latch assembly. If a monitor fuse is open due to a door problem, replace the monitor and secondary switch. It is not necessary to replace the control assembly or primary relay on the control. This due to the construction of the relay. It is capable of carrying the heavy current load where as the switch is not.

It is easy to see the importance of ordering the correct switch. The monitor switch is normally closed and the interlock switches are normally open.

The other protection circuits used in microwave ovens are thermal fuses and thermal cutouts. These devices open when they are exposed to high temperatures. They are used to monitor the temperatures of the oven cavity and magnetron and will interrupt current flow to the oven circuits when open. Thermal cut outs will reset after cooling down to their temperature, but temperature fuses remain open.

In some models, thermal cut outs which have a very low reset temperature are used. These thermal cut outs will not reset after cooling down to room temperature and should be replaced after the cause of the over heating condition has been repaired.

The oven temperature fuse will open if the oven cavity gets too hot, as is the case of a food fire. The magnetron temperature fuse will open if the magnetron overheats due to an abnormal condition such as component malfunction or if the cooling fan becomes inoperative.

Compu-Cook, Compu-Defrost & Express Defrost

Compu-cook, Compu-defrost & Express defrost are recipes programmed in the microprocessor. These recipes are three stages of cook time/power level combinations and were determined by actual test cooking of the foods on the menus. Each food has its own-programmed recipe, which may differ from model to model. The following pages contain tables, which have examples of cooking programs according to the model oven. Express & Compu defrost tables precede the compu-cook table.

To troubleshoot an oven with a compu-cook or compu-defrost complaint the following procedure should be followed.

Check the oven cavity to insure it is clean. If food and or grease is allowed to build up within the oven cavity it will reduce the energy available to heat the food load.

Check the supply voltage going to the oven. For every volt that is down from the rated voltage requirement, a 10 watt power loss will be experienced. Compu-cook and compu-defrost rely on time calculations and will be the same regardless of power output.

Check the power output of the magnetron (using one of the methods described in the magnetron section of this manual). A indication of + or – 10% would require replacement of the magnetron tube.

Check to confirm the timing cycle for the recipe is correct. Refer to the service manual for the model you are working on.

If all of the above checks prove good then the trouble is a customer-related problem. Perhaps the customer is guessing at weights or trying to cook quantities greater than the recipe allow. Perhaps the customer is not following the recipe and not stirring when they should or not covering the food when advised by the control. Perhaps the customer prefers their food cooked more or less than the way the oven was programmed to cook that particular food. The list of customer related problems could go on and on. The probability of the control miscalculating time is almost nil. Most of all compu-cook or compu-defrost trouble will be found in:

1) Customer related problems
2) Unclean oven cavities
3) Low line voltage
4) Weak magnetron tubes

SHARP
Carousel

OVER THE RANGE MICROWAVE OVEN/HOOD SYSTEM

INSTALLATION INSTRUCTIONS

Please read all instructions thoroughly before installing the Microwave Oven/Hood System. Two people are recommended to install this product.
If a new electrical outlet is required, its installation should be completed by a qualified electrician before the Microwave Oven/Hood is installed. See step 3, ELECTRICAL GROUNDING INSRUCTIONS

1. MOUNTING SPACE

This Microwave Oven/Hood requires a mounting space on a wall as shown in Figure 1. It is designed to be used with standard 12-inch wall cabinets.

If the space between the wall cabinets is 36 or 42 inches a Filler Panel Kit can be used to fill the gap. The metal filler panels come in pairs, each either 3 or 6 inches wide. See page 8 for ordering information. The Filler Panel Kit should be installed before the Microwave Oven/Hood is installed

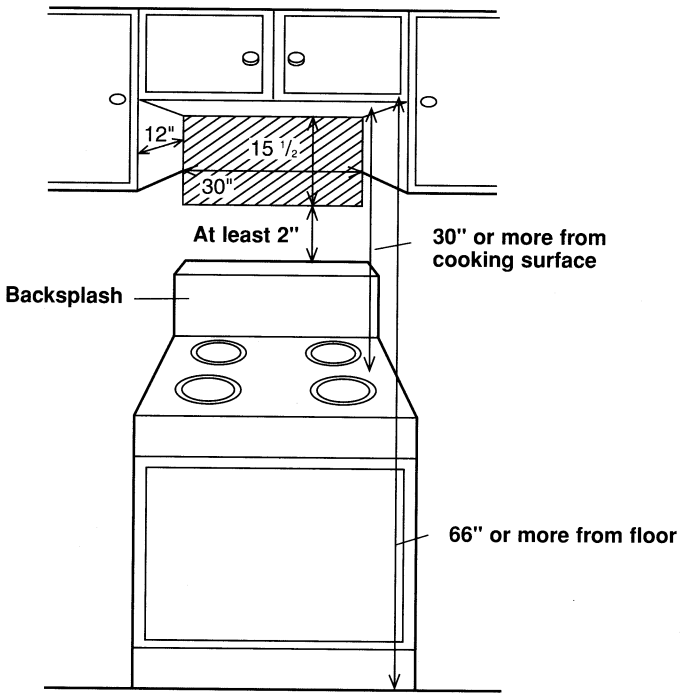
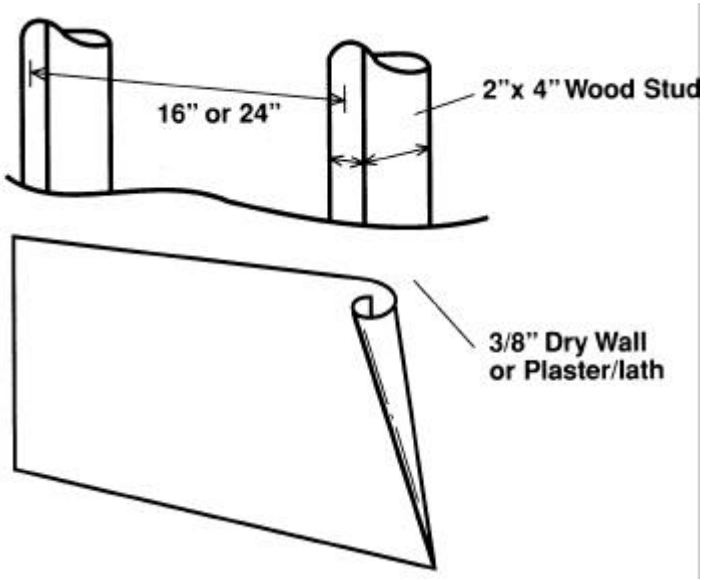


Fig 1

2. WALL CONSTRUCTION

This Microwave Oven/Hood should be mounted against and supported by a flat vertical wall. The wall must be flat for proper installation. If the wall is not flat, use spacers to fill in the gaps. Wall construction should be a minimum of 2" x 4" wood studding and 3/8" or thicker dry wall or plaster/lath. The mounting surfaces must be capable of supporting weight of 110 pounds—the oven and contents—AND the weight of all items which would normally be stored in the top cabinet above the unit.



The unit should be attached to a minimum of one 2" x 4" wall stud. To find the location of the studs, one of the following methods may be used:

A. Use a stud finder, a magnetic device which locates the nails in the stud.

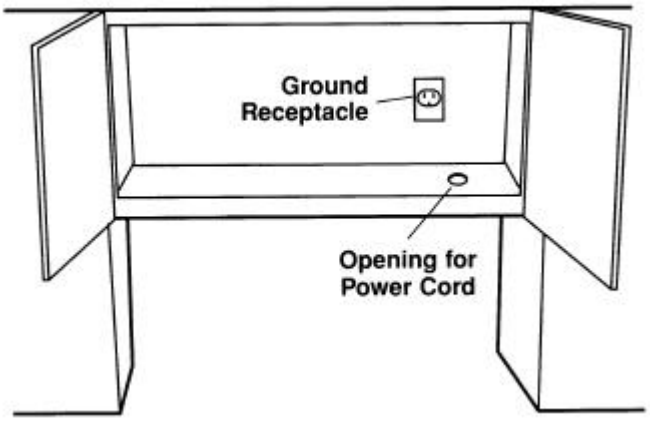
B. Use a hammer to tap lightly across the mounting surface to find a solid sound. This will indicate stud location.

The center of the stud can be located by probing the wall with a small nail to find the edges of the stud and then placing a mark halfway between the edges. The center of any adjacent studs will normally be 16" or 24" to either side of this mark.

3. ELECTRICAL GROUNDING INSTRUCTIONS

This appliance must be grounded. This oven is equipped with a cord having a grounding wire with a grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances. In the event of an electrical short circuit, grounding reduces risk of electric shock by providing an escape wire for the electric current.

WARNING - Improper use of the grounding plug can result in a risk of electric shock. The oven is equipped with a 3-prong grounding plug. DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE GROUNDING PIN FROM THE PLUG.



The Power Supply Cord and plug must be connected to a separate 120 Volt AC, 60 Hz, 15 Amp, or more branch circuit, single grounded receptacle. The receptacle should be located inside the cabinet directly above the Microwave Oven/Hood Ground ~ mounting location.

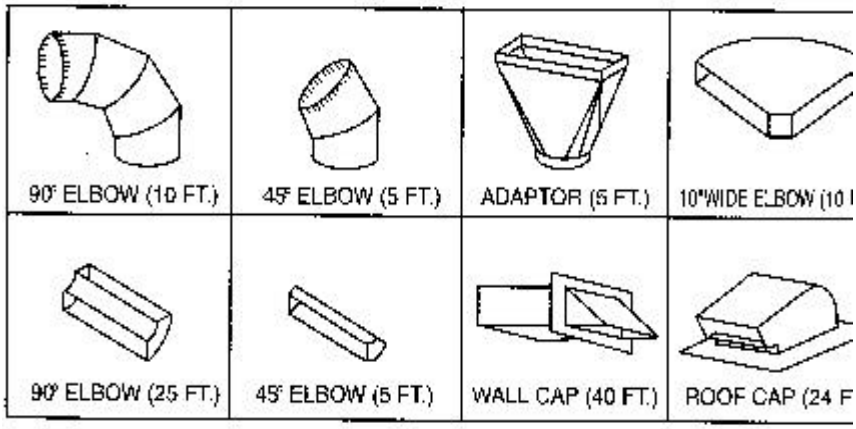
NOTE:

1. If you have any questions about the grounding or electrical instructions, consult a qualified electrician or serviceperson.
2. Neither Sharp nor the dealer can accept any liability for damage to the oven or personal injury resulting from failure to observe the correct electrical connection procedures.

4. HOOD EXHAUST DUCT

When the hood is vented to the outside, a hood exhaust duct is required. All ductwork must be metal; absolutely do not use plastic duct. Check that all connections are made securely. Please read the following carefully:

Exhaust connection: The hood exhaust has been designed to connect to a standard 3-1/4" x 10" rectangular duct. If round duct is required, a rectangular-to-round adapter must be used.



Rear exhaust: If a rear or horizontal exhaust is to be used, care should be taken to align the exhaust with the space between the studs, or wall should be prepared at the time it is constructed by leaving enough space between wall studs to accommodate exhaust.

Maximum duct length: For satisfactory air movement, the total duct length of 3-1/4" X 10" rectangular or 6"diameter round duct should not exceed 140 feet.

Elbows, adapters, wall, roof caps, etc. present additional resistance to air flow and are equivalent to a section of straight duct which is longer than their actual physical size. When calculating the total length, add the equivalent lengths of all transitions and adapters plus the length of all straight duct sections. Figure 4 shows the approximate feet of equivalent length of some typical ductwork parts. Use the values in parentheses for calculating airflow resistance equivalent, which should total less than 140 feet.

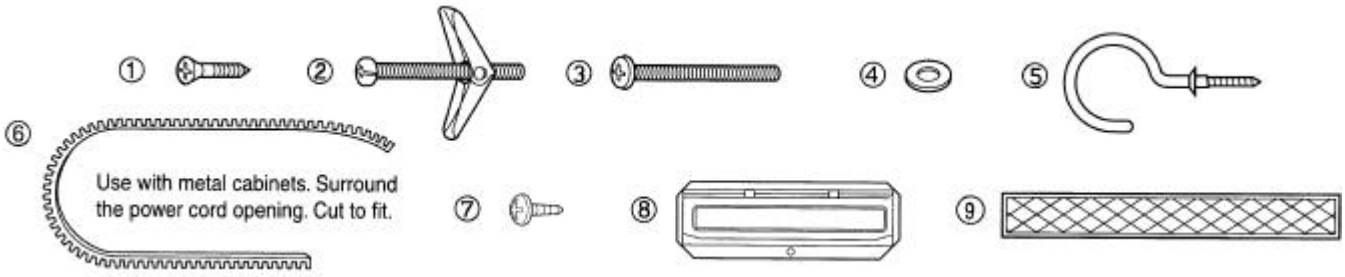
5. TOOLS RECOMMENDED FOR INSTALLATION

Phillips Screwdriver, Electric Drill, 1/2", 5/8" and 3/32" Drill Bits,
1-1/2" Wood Bit or Metal Hole Cutter (if metal cabinet is used)
Saw to cut exhaust opening (if needed)
Protective Drop Cloth for product and range you may also use carton for protection
Scissors, Pencil, Measure, Tape

6. INSTALLATION HARDWARE

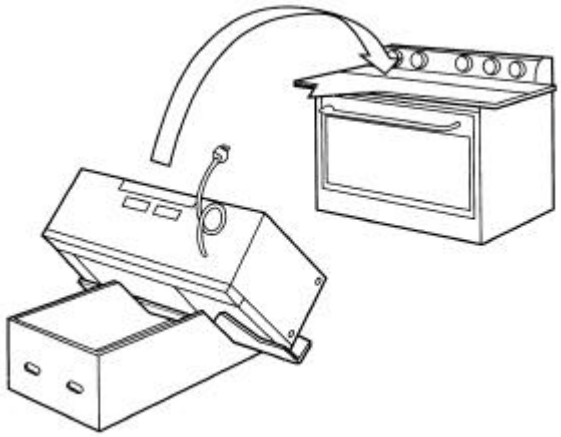
The INSTALLATION HARDWARE items 1-7 are in a small bag. Items 8 and 9 are packed separately. All items are in a small carton packed below the oven.

ITEM	NAME	QUANTITY	PART CODE
(1)	Wood screw 5 x 30mm	6	XTSSD50P35000
(2)	Toggle Bolt #10-24 x 50mm	4	LX-BZ0195WRE0
(3)	Top cabinet screw 5x 60mm	2	XBRSD50P60000
(4)	Flat washer 30mm diameter	2	XWHSD50-16300
(5)	Power Cord Hanger	1	LX-MZ0001WRE0
(6)	Grommet	1	LBSHC0040MRE0
(7)	Tapping Screw 4 x 12mm	1	XOTSD40P12000
(8)	Exhaust Damper Assembly	1	FFTA-B002MRK0
(9)	Charcoal Filter	1	PFIL-B004MRE0



TIP

The dotted cutting line on the packing carton can be cut in order to assist positioning the oven before placing oven on the Mounting Plate See Figure below right



7. PREPARATION OF THE OVEN

1. Open the bottom of the carton, remove oven, all packing materials, Installation Instructions, Wall Template, Top Template and Charcoal Filter; however, DO NOT REMOVE THE WAVEGUIDE COVER, which is located on the ceiling in the oven cavity.

2. CHECK THE OVEN.
Check the oven for any damage, such as misaligned or bent door, damaged door seals and sealing surfaces, broken or loose door hinges and latches and dents inside the cavity or on the door. If there is any damage, do not operate the oven and contact your dealer or SHARP AUTHORIZED SERVICER.

3. Remove and save Screw (A) as shown in Figure 6.

4. Push down carefully on the tabs (B) and (C) at the ends of the Louver to disengage it. Pull the Louver away from the unit and set aside.

5. Loosen the two Mounting Screws (D) which secure the Mounting Plate to the rear side of the oven. Remove the Mounting Plate. See Figure 7

Figure 6 **Figure 7**

8. VENTILATION SYSTEM

This Microwave Oven/Hood is designed for adaptation to three types of hood ventilation systems. Select the type required for your installation.

A. Recirculating—non-vented, ductless. Follow installation procedure A. Recirculating requires the use of the Charcoal Filter 9, which is packed under the oven in the carton.

B. Horizontal Exhaust—outside ventilation. Follow installation procedure B

C. Vertical Exhaust—outside ventilation. Follow installation C

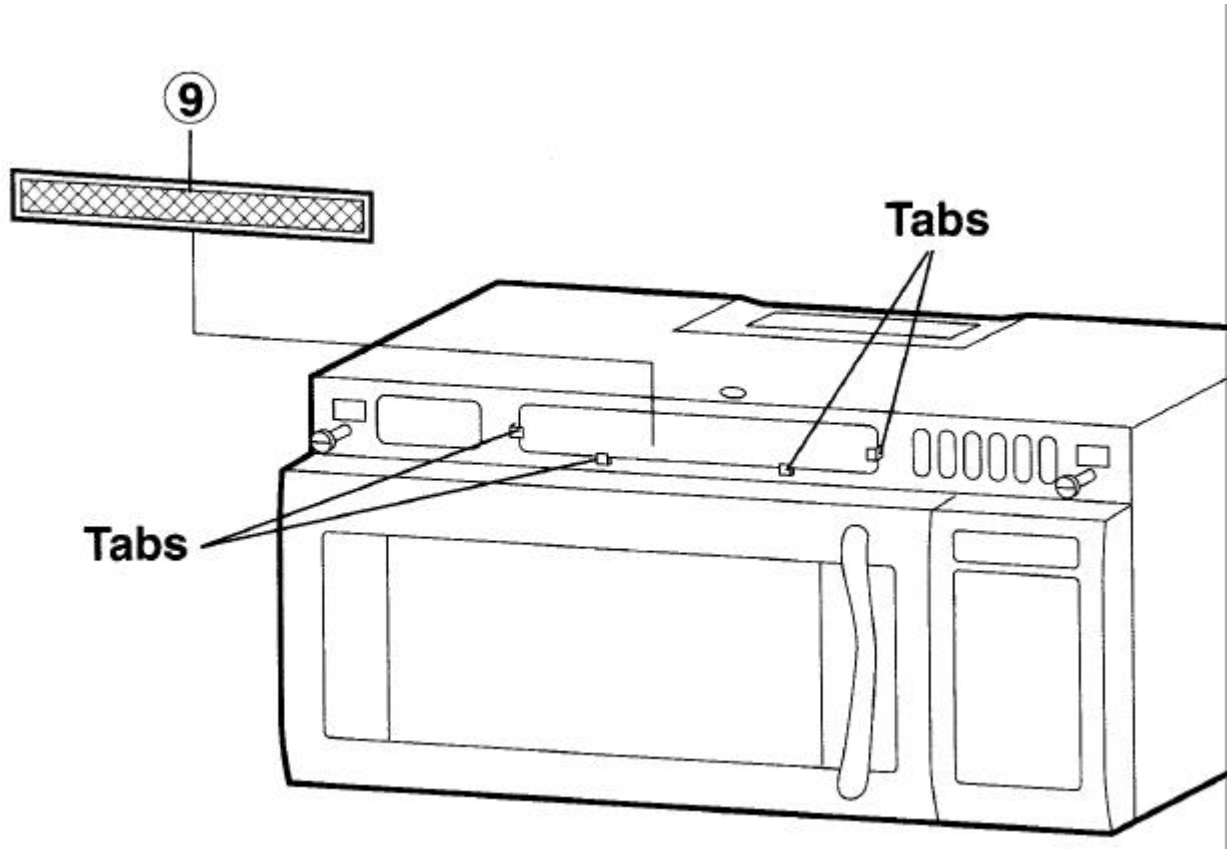
(A) RECIRCULATING: Non-Vented, Ductless Operation

The unit is shipped assembled for recirculating. Attach the Charcoal Filter to the upper side of the oven by sliding into the tabs. See Figure 8.

NOTE:

1. The Exhaust Damper Assembly 8 is not required for recirculating operation.
2. The Charcoal Filter should be replaced every 6 to 12months, depending on use.
3. The Charcoal Filter RK-230 is also sold as an accessory.

Figure 8



(B) HORIZONTAL EXHAUST: Outside Ventilation

1. Remove and save 2 screws from back edge and 1 screw from the top center of Fan Cover Bracket. Remove Fan Cover Bracket by sliding it in the opposite direction of the arrow on the Fan Cover Bracket, as shown in Figure 9.
2. Withdraw Hood Fan Unit carefully and slip wires out of Wire Box. See Figure 10. CAUTION: Do not pull or stretch hood fan wiring.
3. Rotate the Hood Fan Unit and turn end-over-end so that the fan blade openings are facing the back of the oven. Replace Hood Fan Unit into the oven. Be careful not to pinch the lead wire between the inner bracket and the Hood Fan Unit. See Figure 11.
4. Put the lead wire into Wire Box. See Figure 12.
5. Replace the Fan Cover Bracket by sliding it into the slits in the same direction as the arrow on the Fan Cover Bracket. Make sure the fan blades are visible through the rear openings in the oven before proceeding. Attach Fan Cover Bracket to unit with 3 screws, which were removed in Step 1 above. See Figure 12. The Hood Fan Unit is now rotated for horizontal exhaust operation.
6. Attach the Exhaust Damper Assembly 8 to the back of the Mounting Plate by sliding it into the slits in the same direction as the arrow. See Figure 13. Using Tapping Screw 4 X 12 7 from the INSTALLATION HARDWARE, tighten into place.

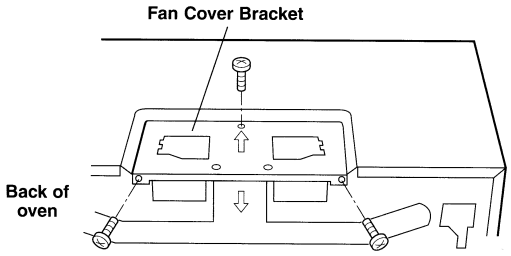


Figure 9

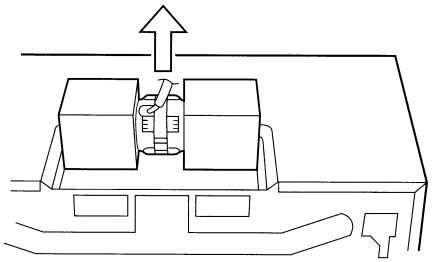


Figure 10

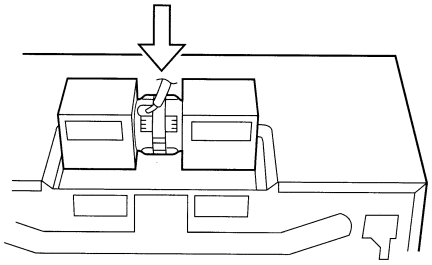


Figure 11

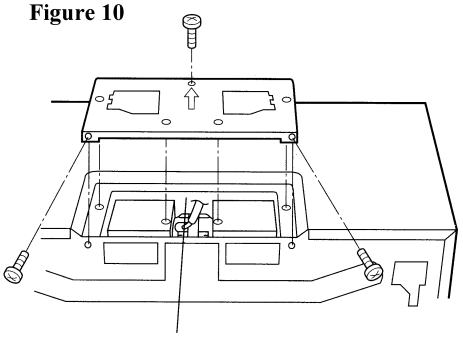


Figure 12

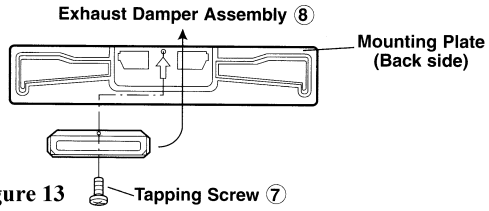


Figure 13

(C) VERTICAL EXHAUST: Outside Ventilation

1.Remove and save 2 screws from back edge and 1 screw from the top center of the Fan Cover Bracket. Remove Fan Cover Bracket by sliding it in the opposite direction of the arrow on the Fan Cover Bracket as shown in Figure 9.

2. Withdraw Hood Fan Unit carefully and slip wires out of Wire Box. CAUTION: Do not pull or stretch hood fan wiring. See Figure 10.

3. Turn the Hood Fan Unit end-over-end. Rotate the Hood Fan Unit 90 degrees so that the fan blade openings are facing upward. Replace Hood Fan Unit into the oven. Be careful not to pinch the lead wire between the inner bracket and the Hood Fan Unit. See Figure 14.

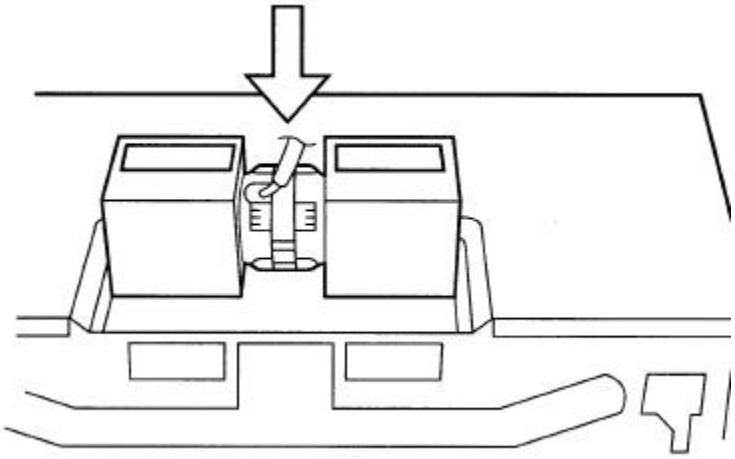


Figure 14

4. Put the lead wire into Wire Box. See Figure 14.

5. Replace the Fan Cover Bracket by sliding it into the slits in the same direction as the arrow on the Fan Cover Bracket. Make sure the fan blades are visible through the top openings in the oven before proceeding. Attach the Fan Cover Bracket to unit with 3 screws, which were removed in Step 1 above. See Figure 12. The Hood Fan Unit is now rotated for vertical exhaust operation.

6. Attach the Exhaust Damper Assembly to the fan cover on the top of the outercase cabinet after mounting the oven. To attach the Exhaust Damper Assembly, refer to MOUNTING OVEN TO THE WALL, Step 7.

9. OVEN INSTALLATION

THIS OVEN CANNOT BE PROPERLY INSTALLED WITHOUT REFERRING TO THE MOUNTING INSTRUCTIONS FOUND ON BOTH TEMPLATES.

THE NEXT STEP IS TO READ AND FOLLOW MOUNTING INFORMATION ON BOTH TOP CABINET AND WALL TEMPLATES.

NOTE: THIS OVEN SHOULD BE ATTACHED TO AT LEAST ONE WALL STUD. See WALL CONSTRUCTION step 2.

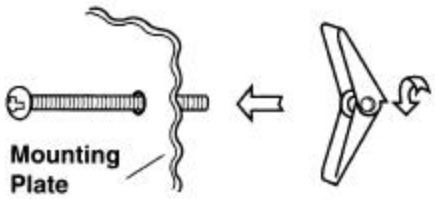
MOUNTING PLATE

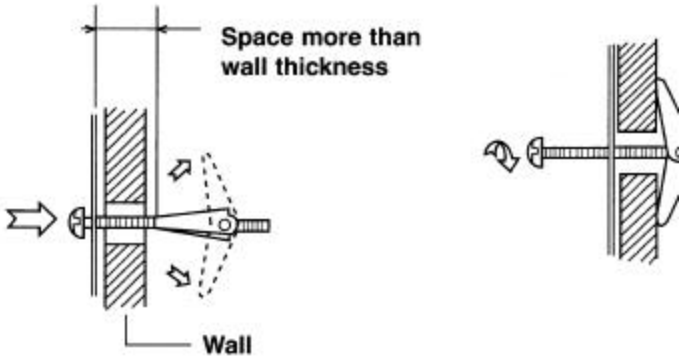
1. Separate 4 Toggle Bolts, 2, packed in the INSTALLATION HARDWARE, from the Toggle Nuts.
2. Use Wood Screws, 1 to attach Mounting Plate to the stud or studs. Use Toggle Bolts to attach Mounting Plate through the holes at A, B, C and D; UNLESS THOSE HOLES ARE LOCATED ON THE STUD. Insert one Toggle Bolt into A, B. C and D where appropriate (these correspond to the holes of the Wall Template) and put the Toggle Nuts onto the Toggle Bolts. Figure 15.
Refer to instructions in Wall Template.

3. Position the Mounting Plate with the Toggle Bolts attached at the wall location and insert Toggle Nuts and Bolts through the holes in the wall with the Toggle Nuts closed. Figure 16. Use Wood Screws 3 to attach the Mounting Plate to studs.

NOTE: Before insertion, be sure you leave a space more than the thickness of the wall between the Mounting Plate and the end of each of the Toggle Nuts (in the closed position). If you do not leave enough space, the Toggle Nut will not be able to open on the other side of the wall. Also, once a Toggle Nut opens, it cannot be withdrawn from the hole; therefore make sure all of the Toggles are in the correct position before insertion.

4. Align the Mounting Plate carefully and hold in position while tightening Toggle Bolts. Pull Toggle Bolt toward you and turn clockwise to tighten. Figure 17.





MOUNTING OVEN TO THE WALL

Two people are recommended to attach the Microwave Oven/Hood to the Mounting Plate.

1. Thread the Power Supply Cord through the hole made in the bottom of the top cabinet.

2. Install the oven by sliding it onto the arms of the Mounting Plate. Push it all the way to the wall. Figure 18.

3. Tighten two Mounting Screws (D) located in the oven faceplate. See Figure 18.

4. Insert the three lower tabs of the Louver (E) into the slits of the oven face plate. Then insert three upper tabs of the Louver (F) into the slits of the oven face plate. See Figure 19.

Figure 18

NOTE The upper middle tab should be inserted between the oven faceplate and the outercase cabinet.

5. Replace and tighten one screw (A) (removed in Section 7 on page 4) to the outercase cabinet. See Figure 20.

6. Use the two Top Cabinet Screws 3 and two Flat Washers 4, supplied in the INSTALLATION HARDWARE, to attach the unit to the top cabinet. See Figure 21.

Figure 19

7. (For Vertical Exhaust Only).
Attach the Exhaust Damper Assembly 8 to the fan cover on the top of the outercase cabinet by sliding it into the slits in the same direction as the arrow. Using Tapping Screw 4 X 12 mm 7 from the INSTALLATION HARDWARE, tighten into place. See Figure 21.

8. Make a bundle of the Power Supply Cord and attach it to the inside of the cabinet using the Power Cord Hanger 5. See Figure 21.

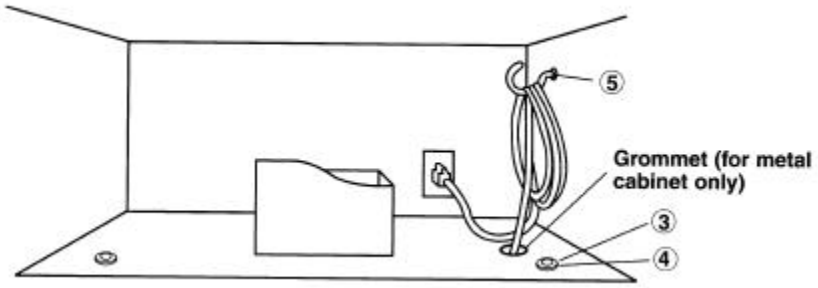


Figure 21

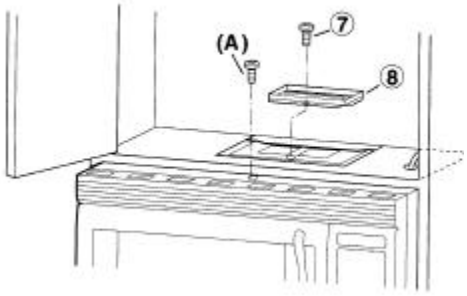


Figure 20

CHECK LIST FOR INSTALLATION

1. Make sure the unit has been installed according to all of the Installation Instructions, the Top Template and Wall Template.

2. Remove all packing material from the oven.

3. Plug in the power cord.

4. Read the Operation Manual.

5. Keep the Installation Instructions for the local electrical inspector's use.

ACCESSORIES Check with your dealer or order directly from the SHARP Accessories and Supplies Center. Call toll-free1 -800-642-2122.

1. CHARCOAL FILTER (RK-230). Filter is used when hood exhaust is recirculated only.

2. FILLER PANEL KIT. This is available for use when the oven is installed in a 36" or 42" wide opening. The metal filler panels come in pairs, each either 3 or 6 inches wide. For information and to purchase contact:

MODERN-AIRE MANUFACTURING CORPORATION
7319 Lankershim Blvd.
North Hollywood, CA 91605
Phone: (818) 765-9870 or (213) 875-1350
Fax: (818) 765-4916

SHARP

SHARP ELECTRONICS CORPORATION TINSEB177MRRO
Sharp Plaza, Mahwah, New Jersey 07430-2135 Printed in U.S.A.

GENERAL SERVICE HINTS

Problem	Solution
A thumping sound is heard when power is applied to the power transformer	Check the transformer mounting at the base of the unit. Bend the transformer tabs up to eliminate any play between the transformer and the base.
Cannot clear the display	Check the door sensing or stop switch circuit for an open. If the circuits are OK, follow the key matrix to determine if the problem is in the key unit or control unit
Turntable rotates in either direction.	This is normal
Control unit is dead	Check foil fuse. Jumper in a spare fuse before replacing the control unit. All control units contain foil fuses, which are built into the foil pattern on the circuit board. The foil fuses are located on the primary side of the transformer. Extra fuses are provided so that the unit may be repaired without having to be replaced. Check the varistor, replace if necessary
AH sensor works erratically	Ensure the wiring on the power transformer is correct. Red wire closet to outer cabinet wall.
Wave guide cover burns	Check oven for cleanliness. Advise customer
Monitor fuse opens every few months	Check the fuse holder to ensure the clamps have not experienced metal fatigue.

Commonly used parts for 2000 models			
Model	**Ref**	**Part**	**Desc**
R-120DB	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA754WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA705WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA831WRRZ	Instruction book
R-120DG	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-8	RV-MZA198WRE0	Magnetron (Interchangeable)
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (Interchangeable)
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA781WRPZ	Outer case cabinet

MODEL	REF	PART CODE	DESCRIPTION
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA747WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA857WRRZ	Instruction book
R-120DK	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA763WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA719WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA831WRRZ	Instruction book
R-120DP	1-1	QSW-MA137WRE0	Secondary interlock switch & door

MODEL	REF	PART CODE	DESCRIPTION
			sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-8	RV-MZA198WRE0	Magnetron (Interchangeable)
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (Interchangeable)
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA783WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA749WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA857WRRZ	Instruction book
R-120DR	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-8	RV-MZA198WRE0	Magnetron (Interchangeable)
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (Interchangeable)
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA765WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel

MODEL	REF	PART CODE	DESCRIPTION
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA721WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA831WRRZ	Instruction book
R-120DS	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-8	RV-MZA198WRE0	Magnetron (Interchangeable)
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (Interchangeable)
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA779WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA743WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA857WRRZ	Instruction book
R-120DW	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA027WRKZ	C/T fuse & monitor switch assembly

MODEL	REF	PART CODE	DESCRIPTION
	1-5	FH-DZA095WRKZ	High voltage rectifier
	1-6	RC-QZA209WRE0	High voltage capacitor
	1-7	RMOTEA383WRE0	Fan motor
	1-8	RV-MZA195WRE0	Magnetron
	1-8	RV-MZA198WRE0	Magnetron (Interchangeable)
	1-9	RLMPTA068WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (Interchangeable)
	1-11	RTHM-A117WRE0	Thermal cutout
	1-12	RTRN-A606WRZZ	Power transformer
	2-1	GCABUA761WRPZ	Outer case cabinet
	3-1	DPWBFC045WRUZ	Control unit
	3-2	FPNLCB485WRKZ	Panel frame with key unit
	3-2-1	HPNLCB607WRFZ	Control panel
	3-2-2	PSHEPA723WREZ	Key sheet
	4-1	PHOK-A117WRPZ	Latch hook
	4-12	PCOVPA359WREZ	Waveguide cover
	5-1	FDORFA341WRTZ	Door panel
	5-2	GWAKPA717WRRZ	Door frame
	5-3	JBTN-B119WRFZ	Start / Minute Plus button & Stop / Clear button
	5-5	LSTPPA194WRFZ	Latch head
	5-8	GCOVHA418WRFZ	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A060WRE0	Turntable
	6-3	TINSEA831WRRZ	Instruction book
R-204CW	1-1	QSW-MA131WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA020WRK0	C/T fuse assembly
	1-5	FH-DZA081WRK0	High voltage rectifier assembly
	1-6	RC-QZA228WRE0	High voltage capacitor
	1-6	RC-QZA201WRE0	High voltage capacitor (interchangeable)
	1-7	RMOTEA355WRE0	Fan motor
	1-7	RMOTEA338WRE0	Fan motor (interchangeable)
	1-8	RV-MZA226WRE0	Magnetron
	1-8	RV-MZA282WRE0	Magnetron (interchangeable)
	1-9	RLMPTA030WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (interchangeable)
	1-11	RTHM-A078WRE0	Thermal cut-out
	1-12	RTRN-A561WRE0	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	2-1	GCABUA696WRP0	Outer case cabinet
	3-1	DPWBFB973WRU0	Control unit
	3-2	FPNLCB426WRK0	Control panel frame with key unit and LCD
	3-2-1	FUNTKA928WRE0	Key unit
	3-2-2	RLCDSA045DRE0	Liquid crystal display
	4-1	PHOK-A105WRF0	Latch hook
	4-11	PCOVPA276WRE0	Waveguide cover
	5-1	FDORFA321WRT0	Door panel
	5-2	GWAKPA628WRF0	Door frame
	5-3	HPNL-A738WRRZ	Door screen
	5-4	LSTPPA175WRF0	Latch Head
	5-7	GCOVHA390WRF0	Choke cover
	6-1	FROLPA090WRK0	Turntable support
	6-2	NTNT-A094WRE0	Turntable
	6-3	TINSEA852WRRZ	Instruction book
R-220DW	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA025WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA081WRK0	High voltage rectifier
	1-6	RC-QZA228WRE0	High voltage capacitor
	1-6	RC-QZA200WRE0	High voltage capacitor (interchangeable)
	1-7	RMOTEA355WRE0	Fan motor
	1-7	RMOTEA383WRE0	Fan motor (interchangeable)
	1-8	RV-MZA226WRE0	Magnetron
	1-9	RLMPTA030WRE0	Oven lamp
	1-9	RLMPTA068WRE0	Oven lamp (interchangeable)
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (interchangeable)
	1-11	RTHM-A078WRE0	Thermal cut-out
	1-12	RTRN-A604WRZZ	Power transformer
	2-1	GCABUA696WRP0	Outer cabinet
	3-1	DPWBFC027WRUZ	Control unit
	3-2	FPNLCB477WRKZ	Control panel frame with key unit & LCD
	3-2-1	FUNTKA972WREZ	Key unit
	3-2-2	RLCDSA045DRE0	Liquid crystal display
	3-3	QCNC-A012WRE0	Rubber connector
	4-1	PHOK-A105WRF0	Latch hook
	4-11	PCOVPA276WRE0	Waveguide cover
	5-1	FDORFA321WRT0	Door panel
	5-2	GWAKPA628WRF0	Door frame panel
	5-3	HPNL-A738WRRZ	Door screen
	5-4	LSTPPA175WRF0	Latch head
	5-5	MSPRTA084WRE0	Latch spring

MODEL	REF	PART CODE	DESCRIPTION
	5-7	GCOVHA390WRF0	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A094WRE0	Turntable
	6-3	TINSEA828WRRZ	Instruction book
R-230DK	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA025WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA081WRK0	High voltage rectifier
	1-6	RC-QZA228WRE0	High voltage capacitor
	1-6	RC-QZA200WRE0	High voltage capacitor (interchangeable)
	1-7	RMOTEA355WRE0	Fan motor
	1-7	RMOTEA383WRE0	Fan motor (interchangeable)
	1-8	RV-MZA226WRE0	Magnetron
	1-9	RLMPTA030WRE0	Oven lamp
	1-9	RLMPTA068WRE0	Oven lamp (interchangeable)
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (interchangeable)
	1-11	RTHM-A078WRE0	Thermal cut-out
	1-12	RTRN-A604WRZZ	Power transformer
	2-1	GCABUA756WRPZ	Outer cabinet
	3-1	DPWBFC028WRUZ	Control unit
	3-2	FPNLCB482WRKZ	Control panel frame with key unit & LCD
	3-2-1	FUNTKA977WREZ	Key unit
	3-2-2	RLCDSA045DRE0	Liquid crystal display
	3-3	QCNC-A012WRE0	Rubber connector
	4-1	PHOK-A105WRF0	Latch hook
	4-11	PCOVPA276WRE0	Waveguide cover
	5-1	FDORFA321WRT0	Door panel
	5-2	GWAKPA709WRFZ	Door frame
	5-3	HPNL-A738WRRZ	Door screen
	5-4	LSTPPA175WRF0	Latch head
	5-5	MSPRTA084WRE0	Latch spring
	5-7	GCOVHA390WRF0	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A094WRE0	Turntable
	6-3	TINSEA828WRRZ	Instruction book
R-230DW	1-1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch
	1-2	FFS-BA025WRKZ	C/T fuse & monitor switch assembly
	1-5	FH-DZA081WRK0	High voltage rectifier
	1-6	RC-QZA228WRE0	High voltage capacitor
	1-6	RC-QZA200WRE0	High voltage capacitor (interchangeable)
	1-7	RMOTEA355WRE0	Fan motor

MODEL	REF	PART CODE	DESCRIPTION
	1-7	RMOTEA383WRE0	Fan motor (interchangeable)
	1-8	RV-MZA226WRE0	Magnetron
	1-9	RLMPTA030WRE0	Oven lamp
	1-9	RLMPTA068WRE0	Oven lamp (interchangeable)
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor (interchangeable)
	1-11	RTHM-A078WRE0	Thermal cut-out
	1-12	RTRN-A604WRZZ	Power transformer
	2-1	GCABUA696WRP0	Outer cabinet
	3-1	DPWBFC028WRUZ	Control unit
	3-2	FPNLCB481WRKZ	Control panel frame with key unit & LCD
	3-2-1	FUNTKA976WREZ	Key unit
	3-2-2	RLCDSA045DRE0	Liquid crystal display
	3-3	QCNC-A012WRE0	Rubber connector
	4-1	PHOK-A105WRF0	Latch hook
	4-11	PCOVPA276WRE0	Waveguide cover
	5-1	FDORFA321WRT0	Door panel
	5-2	GWAKPA628WRFZ	Door frame
	5-3	HPNL-A738WRRZ	Door screen
	5-4	LSTPPA175WRF0	Latch head
	5-5	MSPRTA084WRE0	Latch spring
	5-7	GCOVHA390WRF0	Choke cover
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A094WRE0	Turntable
	6-3	TINSEA828WRRZ	Instruction book
R-305DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-2	QFSHDA009WRE0	Fuse holder
	1-3	FFS-BA021WRK0	Monitor fuse 20A & monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA088WRK0	High voltage rectifier assembly
	1-7	RC-QZA173WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out
	1-14	RTRN-A576WRE0	Power transformer
	2-1	GCABUA690WRP0	Outer case cabinet
	3-1	DPWBFC021WRKZ	Power unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-3	GWAKPA701WRRZ	Door frame
	5-4	HPNL-A734WRRZ	Door screen

MODEL	REF	PART CODE	DESCRIPTION
	5-5	LSTPPA193WRFZ	Latch head
	5-9	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA848WRRZ	Instruction book
R-308DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A & monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA268WRZZ	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-11	RLMPTA068WRE0	Oven lamp
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out
	1-14	RTRN-A603WRZZ	Power transformer
	2-1	GCABUA690WRP0	Outer case cabinet
	3-1	DPWBFC021WRKZ	Power unit
	3-2	DPWBFC020WRKZ	CPU unit
	3-3	FPNLCB499WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA991WREZ	Key unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-3	GWAKPA701WRRZ	Door frame
	5-4	HPNL-A734WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRRK0	Turntable support
	6-2	NTNT-A084WRE0	Turntable tray
	6-8	TINSEA826WRRZ	Instruction book
R-310DK	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A & monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA268WRZZ	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-11	RLMPTA068WRE0	Oven lamp
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out
	1-14	RTRN-A603WRZZ	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC021WRKZ	Power unit
	3-2	DPWBFC020WRKZ	CPU unit
	3-3	FPNLCB475WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA970WREZ	Key unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-3	GWAKPA694WRRZ	Door frame
	5-4	HPNL-A731WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA826WRRZ	Instruction book
R-310DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A & monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA268WRZZ	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-11	RLMPTA068WRE0	Oven lamp
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out
	1-14	RTRN-A603WRZZ	Power transformer
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC021WRKZ	Power unit
	3-2	DPWBFC020WRKZ	CPU unit
	3-3	FPNLCB478WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA973WREZ	Key unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-3	GWAKPA701WRRZ	Door frame
	5-4	HPNL-A734WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA826WRRZ	Instruction book
R-320DK	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch

MODEL	REF	PART CODE	DESCRIPTION
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA234WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC024WRKZ	Power unit
	3-2	DPWBFC023WRKZ	CPU unit
	3-3	FPNLCB484WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA980WREZ	Key unit
	3-4	PSHEPA588WRE0	LED sheet
	3-5	LHLD-A219WRFZ	LCD holder
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA694WRRZ	Door frame
	5-4	HPNL-A731WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable table support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA832WRRZ	Instruction book
R-320DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA234WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA690WRPZ	Outer case cabinet
	3-1	DPWBFC024WRKZ	Power unit
	3-2	DPWBFC023WRKZ	CPU unit
	3-3	FPNLCB486WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA981WREZ	Key unit
	3-4	PSHEPA588WRE0	LED sheet
	3-5	LHLD-A219WRFZ	LCD holder
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA701WRRZ	Door frame
	5-4	HPNL-A734WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable table support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA832WRRZ	Instruction book
R-320DQ	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch
	1-4	RTHM-A078WRE0	Thermal cut-out
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA234WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA758WRPZ	Outer case cabinet
	3-1	DPWBFC024WRKZ	Power unit
	3-2	DPWBFC023WRKZ	CPU unit
	3-3	FPNLCB487WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA981WREZ	Key unit
	3-4	PSHEPA588WRE0	LED sheet
	3-5	LHLD-A219WRFZ	LCD holder
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film

MODEL	REF	PART CODE	DESCRIPTION
	5-3	GWAKPA710WRRZ	Door frame
	5-4	HPNL-A739WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable table support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA832WRRZ	Instruction book
R-330DK	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 degrees
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-9	RMOTEA355WRE0	Fan motor (interchangeable)
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC044WRKZ	Power unit
	3-2	DPWBFC025WRKZ	CPU unit
	3-3	FPNLCB488WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA983WREZ	Key unit
	3-4	PSHEPA672WRE0	LED sheet
	3-5	LHLD-A185WRF0	LCD holder
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA713WRRZ	Door frame
	5-4	HPNL-A740WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA834WRRZ	Instruction book
R-330DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch

MODEL	REF	PART CODE	DESCRIPTION
			assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 degrees
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-9	RMOTEA355WRE0	Fan motor (interchangeable)
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC044WRKZ	Power unit
	3-2	DPWBFC025WRKZ	CPU unit
	3-3	FPNLCB489WRKZ	Control panel frame with key unit
	3-3-1	FUNTKA984WREZ	Key unit
	3-4	PSHEPA672WRE0	LED sheet
	3-5	LHLD-A185WRF0	LCD holder
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA715WRRZ	Door frame
	5-4	HPNL-A742WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA834WRRZ	Instruction book
R-340DK	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out125 degrees
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA234WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-9	RMOTEA355WRE0	Fan motor (interchangeable)
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	PLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA229WRE0	Turntable motor (interchangeable)

MODEL	REF	PART CODE	DESCRIPTION
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable0
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC042WRKZ	Power unit
	3-3	FPNLCB492WRKZ	Control panel frame with key unit
	3-3-1	DUNTKA716WRKZ	Key unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA727WRRZ	Door frame
	5-4	HPNL-A740WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA836WRRZ	Instruction book
R-340DW	1-1	QSW-MA147WRZZ	2nd interlock switch / door sensing switch
	1-3	FFS-BA021WRK0	Monitor fuse 20A and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out125 degrees
	1-6	FH-DZA094WRKZ	High voltage rectifier assembly
	1-7	RC-QZA234WRE0	High voltage capacitor
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-9	RMOTEA355WRE0	Fan motor (interchangeable)
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	PLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA229WRE0	Turntable motor (interchangeable)
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable0
	1-13	RTHM-A080WRE0	Thermal cut-out 145 degrees
	1-14	RTRN-A603WRZZ	Power transformer
	1-15	FDTCTA197WRK0	AH sensor assembly
	2-1	GCABUA744WRPZ	Outer case cabinet
	3-1	DPWBFC042WRKZ	Power unit
	3-3	FPNLCB495WRKZ	Control panel frame with key unit
	3-3-1	DUNTKA717WRKZ	Key unit
	4-3	PHOK-A116WRFZ	Latch hook
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film

MODEL	REF	PART CODE	DESCRIPTION
	5-3	GWAKPA728WRRZ	Door frame
	5-4	HPNL-A742WRRZ	Door screen
	5-5	LSTPPA193WRFZ	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	5-9	GCOVHA417WRFZ	Choke cover
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA836WRRZ	Instruction book
R-405DK	1-1	RC-QZB234MRE0	High voltage capacitor
	1-2	FH-DZB013MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA283WRE0	Magnetron
	1-12	RMOTDA211WRE0	Turntable motor
	1-13	RTRN-B065MRE0	Power transformer
	2-3	GCABUB092MRP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB280MRK0	Control panel frame with key unit
	3-2-1	FUNTKB225MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B154MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB041MRF0	Choke cover
	5-5	HPNL-B087MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB216MRR0	Operation manual
R-408DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp

MODEL	REF	PART CODE	DESCRIPTION
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	2-3	GCABUB093RP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB281MRK0	Control panel frame with key unit
	3-2-1	FUNTKB226RE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B159MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB042MRF0	Choke cover
	5-5	HPNL-B088MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB217MRR0	Operation manual
R-410DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	2-3	GCABUB093RP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB279MRK0	Control panel frame with key unit
	3-2-1	FUNTKB226RE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button

MODEL	REF	PART CODE	DESCRIPTION
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B159MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB042MRF0	Choke cover
	5-5	HPNL-B088MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB217MRR0	Operation manual
R-420DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sending switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB092MRP0	Outer case cabinet
	3-1	CPWBFB042MRU0	Control unit
	3-2	FPNLCB283MRK0	Control panel frame with key unit
	3-2-1	FUNTKB228MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B009MRF0	LCD holder
	3-4	PSHEPB023MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B154MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film

MODEL	REF	PART CODE	DESCRIPTION
	5-4	GCOVHB042MRF0	Choke cover
	5-5	HPNL-B087MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB219MRR0	Operation manual
R-420DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sending switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB088MRP0	Outer case cabinet
	3-1	CPWBFB042MRU0	Control unit
	3-2	FPNLCB284MRK0	Control panel frame with key unit
	3-2-1	FUNTKB229MRE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B009MRF0	LCD holder
	3-4	PSHEPB023MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B159MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB042MRF0	Choke cover
	5-5	HPNL-B088MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB219MRR0	Operation manual
R-419CK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB013MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly

MODEL	REF	PART CODE	DESCRIPTION
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA290WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B065MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB097MRP0	Outer case cabinet
	3-1	CPWBFB031MRU0	Control unit
	3-2	FPNLCB311MRK0	Control panel frame with key unit
	3-2-1	FUNTKB192MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B009MRF0	LCD holder
	3-4	PSHEPB023MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB073MRP0	Waveguide cover
	5-1	FCOV-B154MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB041MRF0	Choke cover
	5-5	HPNL-B087MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB222MRR0	Operation manual
R-430DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB092MRP0	Outer case cabinet
	3-1	CPWBFB043MRU0	Control unit
	3-2	FPNLCB285MRK0	Control panel frame with key unit

MODEL	REF	PART CODE	DESCRIPTION
	3-2-1	FUNTKB230MRE0	Key unit
	3-2-2	JBTN-B095MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B013MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B156MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB038MRF0	Choke cover
	5-5	HPNL-B092MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB241MRR0	Operation manual
	6-9	TCADUB004MRP0	Recipe card
R-430DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB093MRP0	Outer case cabinet
	3-1	CPWBFB043MRU0	Control unit
	3-2	FPNLCB286MRK0	Control panel frame with key unit
	3-2-1	FUNTKB231MRE0	Key unit
	3-2-2	JBTN-B095MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B013MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B157MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-2	FDORFB062MRT0	Door panel

MODEL	REF	PART CODE	DESCRIPTION
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB038MRF0	Choke cover
	5-5	HPNL-B092MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB241MRR0	Operation manual
	6-9	TCADUB004MRP0	Recipe card
R-430DQ	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB094MRP0	Outer case cabinet
	3-1	CPWBFB043MRU0	Control unit
	3-2	FPNLCB287MRK0	Control panel frame with key unit
	3-2-1	FUNTKB232MRE0	Key unit
	3-2-2	JBTN-B096MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B013MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B158MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB038MRF0	Choke cover
	5-5	HPNL-B094MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB241MRR0	Operation manual
	6-9	TCADUB004MRP0	Recipe card
R-440DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly

MODEL	REF	PART CODE	DESCRIPTION
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB092MRP0	Outer case cabinet
	3-1	CPWBFB043MRU0	Control unit
	3-1-1	DPWBFB095MRU0	Power unit
	3-2	FPNLCB305MRK0	Control panel frame with key unit
	3-2-1	FUNTKB250MRE0	Key unit
	3-2-2	JBTN-B094MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B013MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B168MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB038MRF0	Choke cover
	5-5	HPNL-B092MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB239MRR0	Operation manual
	6-9	TCADUB004MRP0	Recipe card
R-440DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	Turntable motor

MODEL	REF	PART CODE	DESCRIPTION
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA198WRK0	AH sensor
	2-3	GCABUB093MRP0	Outer case cabinet
	3-1	CPWBFB044MRU0	Control unit
	3-1-1	DPWBFB095MRU0	Power unit
	3-2	FPNLCB306MRK0	Control panel frame with key unit
	3-2-1	FUNTKB251MRE0	Key unit
	3-2-2	JBTN-B095MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B013MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B169MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-2	FDORFB062MRT0	Door panel
	5-3	PSHEPB021MRE0	Sealer film
	5-4	GCOVHB038MRF0	Choke cover
	5-5	HPNL-B093MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A095WRE0	Turntable tray
	6-8	TINSEB239MRR0	Operation manual
	6-9	TCADUB004MRP0	Recipe card
R-508DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	2-3	GCABUB096MRP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB295MRK0	Control panel frame with key unit
	3-2-1	FUNTKB240MRE0	Key unit
	3-2-2	JBTN-B093MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet

MODEL	REF	PART CODE	DESCRIPTION
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B155MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B089MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB217MRR0	Operation manual
R-510DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	2-3	GCABUB096MRP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB293MRK0	Control panel frame with key unit
	3-2-1	FUNTKB238MRE0	Key unit
	3-2-2	JBTN-B093MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B155MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B089MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support

MODEL	REF	PART CODE	DESCRIPTION
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB216MRR0	Operation manual
R-510DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	2-3	GCABUB089MRP0	Outer case cabinet
	3-1	CPWBFB041MRU0	Control unit
	3-2	FPNLCB294MRK0	Control panel frame with key unit
	3-2-1	FUNTKB239MRE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	PSHEPB023MRE0	LED sheet
	3-4	LHLD-B007MRF0	LCD holder
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B139MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B090MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB216MRR0	Operation manual
R-520DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assmebly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RC-MZA255WRE0	Magnetron

MODEL	REF	PART CODE	DESCRIPTION
	1-11	RV-MZA293WRE0	Magnetron (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB096MRP0	Outer case cabinet
	3-1	CPWBFB042MRU0	Control unit
	3-2	FPNLCB299MRK0	Control panel frame with key unit
	3-2-1	FUNTKB244MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B009MRF0	LCD holder
	3-4	PSHEPB023MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B155MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B089MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB219MRR0	Operation manual
	6-10	TCADUB004MRR0	Recipe card
R-520DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assmebly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RC-MZA255WRE0	Magnetron
	1-11	RV-MZA293WRE0	Magnetron (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB089MRP0	Outer case cabinet
	3-1	CPWBFB042MRU0	Control unit
	3-2	FPNLCB299MRK0	Control panel frame with key unit
	3-2-1	FUNTKB245MRE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button

MODEL	REF	PART CODE	DESCRIPTION
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B009MRF0	LCD holder
	3-4	PSHEPB023MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B139MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B090MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB219MRR0	Operation manual
	6-10	TCADUB004MRR0	Recipe card
R-530DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assmebly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RC-MZA255WRE0	Magnetron
	1-11	RV-MZA293WRE0	Magnetron (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB096MRP0	Outer case cabinet
	3-1	CPWBFB042MRU0	Control unit
	3-2	FPNLCB301MRK0	Control panel frame with key unit
	3-2-1	FUNTKB246MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B010MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B155MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring

MODEL	REF	PART CODE	DESCRIPTION
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B089MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB220MRR0	Operation manual
	6-10	TCADUB004MRR0	Recipe card
R-530DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assmebly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-10	QFS-TA014WRE0	Cavity temperature fuse
	1-11	RC-MZA255WRE0	Magnetron
	1-11	RV-MZA293WRE0	Magnetron (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB089MRP0	Outer case cabinet
	3-1	CPWBFB043MRU0	Control unit
	3-2	FPNLCB302MRK0	Control panel frame with key unit
	3-2-1	FUNTKB247MRE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	3-3	LHLD-B010MRF0	LCD holder
	3-4	PSHEPB027MRE0	LED sheet
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B139MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B090MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB220MRR0	Operation manual
	6-10	TCADUB004MRR0	Recipe card

MODEL	REF	PART CODE	DESCRIPTION
R-540DK	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-11	RV-MZA293WRE0	Magnetron
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB096MRP0	Outer case cabinet
	3-1	CPWBFB044MRU0	Control unit
	3-2	FPNLCB303MRK0	Control panel frame with key unit
	3-2-1	FUNTKB248MRE0	Key unit
	3-2-2	JBTN-B092MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B170MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B089MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB224MRR0	Operation manual
R-540DW	1-1	RC-QZB018MRE0	High voltage capacitor
	1-2	FH-DZB008MRY0	High voltage rectifier assembly
	1-4	RLMPTA068WRE0	Oven lamp
	1-5	RMOTEA346WRE0	Fan motor
	1-7	FFS-BA016/KIT	Monitor switch and fuse assembly
	1-8	QSW-MA085WRE0	Secondary interlock switch and door sensing switch
	1-9	QFS-TA013WRE0	Magnetron temperature fuse
	1-11	RV-MZA293WRE0	Magnetron
	1-12	RMOTDA229WRE0	Turntable motor
	1-13	RTRN-B064MRE0	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	1-15	FDTCTA206WRKZ	AH sensor
	2-3	GCABUB089MRP0	Outer case cabinet
	3-1	CPWBFB044MRU0	Control unit
	3-2	FPNLCB304MRK0	Control panel frame with key unit
	3-2-1	FUNTKB249MRE0	Key unit
	3-2-2	JBTN-B087MRF0	Open button
	3-2-3	MSPRTA050WRE0	Open button spring
	4-3	PHOK-B018MRF0	Latch hook
	4-4	MLEVPB016MRF0	Switch lever
	4-9	PCOVPB085MRP0	Waveguide cover
	5-1	FCOV-B171MRK0	Door frame assembly
	5-1-1	LSTPPB021MRF0	Latch head
	5-1-2	MSPRTA046WRE0	Latch spring
	5-2	FDORFB049MRT0	Door panel
	5-3	PSHEPB016MRE0	Sealer film
	5-4	GCOVHB039MRF0	Choke cover
	5-5	HPNL-B090MRE0	Door screen
	6-4	FROLPB025MRK0	Turntable support
	6-5	NTNT-A099WRE0	Turntable tray
	6-8	TINSEB224MRR0	Operation manual
R-610DK	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch assembly
	1-5	RTHM-A116WRE0	Thermal cut-out
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-9	RTRN-A609WRZZ	Power transformer
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	2-4	GCABUA773WRPZ	Outer case cabinet
	3-1	DPWBFC069WRUZ	Power unit
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A040WRKZ	Door screen assembly
	5-3-1	PSHEPA736WREZ	Key sheet
	5-4	GWAKPA736WRFZ	Door frame

MODEL	REF	PART CODE	DESCRIPTION
	5-5	JHNDPA188WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A225WRFZ	LCD holder
	5-17	PSHEPA588WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA845WRRZ	Instruction book
R-610DS	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch assembly
	1-5	RTHM-A116WRE0	Thermal cut-out
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-9	RTRN-A609WRZZ	Power transformer
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	2-4	GCABUA777WRPZ	Outer case cabinet
	3-1	DPWBFC069WRUZ	Power unit
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A040WRKZ	Door screen assembly
	5-3-1	PSHEPA736WREZ	Key sheet
	5-4	GWAKPA736WRFZ	Door frame
	5-5	JHNDPA186WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A225WRFZ	LCD holder
	5-17	PSHEPA588WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA845WRRZ	Instruction book
R-610DW	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch

MODEL	REF	PART CODE	DESCRIPTION
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch assembly
	1-5	RTHM-A116WRE0	Thermal cut-out
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-9	RTRN-A609WRZZ	Power transformer
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	2-4	GCABUA775WRPZ	Outer case cabinet
	3-1	DPWBFC069WRUZ	Power unit
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A041WRKZ	Door screen assembly
	5-3-1	PSHEPA737WREZ	Key sheet
	5-4	GWAKPA737WRFZ	Door frame
	5-5	JHNDPA188WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A225WRFZ	LCD holder
	5-17	PSHEPA588WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA845WRRZ	Instruction book
R-630DK	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	1-15	FDTCTA209WRKZ	AH sensor

MODEL	REF	PART CODE	DESCRIPTION
	2-4	GCABUA773WRPZ	Outer case cabinet
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A042WRKZ	Door screen assembly
	5-3-1	PSHEPA741WREZ	Key sheet
	5-4	GWAKPA736WRFZ	Door frame
	5-5	JHNDPA188WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A226WRFZ	LCD holder
	5-17	PSHEPA672WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA863WRRZ	Instruction book
R-630DS	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	1-15	FDTCTA209WRKZ	AH sensor
	2-4	GCABUA777WRPZ	Outer case cabinet
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A042WRKZ	Door screen assembly
	5-3-1	PSHEPA741WREZ	Key sheet
	5-4	GWAKPA738WRFZ	Door frame
	5-5	JHNDPA186WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A226WRFZ	LCD holder
	5-17	PSHEPA672WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support

MODEL	REF	PART CODE	DESCRIPTION
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA863WRRZ	Instruction book
R-630DW	1-3	QSW-MA137WRE0	Secondary interlock switch / door sensing switch
	1-4	FFS-BA023WRK0	Monitor fuse 20 Amp and monitor switch
	1-6	FH-DZA097WRKZ	High voltage rectifier assembly
	1-7	RC-QZA211WRE0	High voltage capacitor
	1-8	RMOTEA395WRZZ	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp (interchangeable)
	1-12	RMOTDA229WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor (interchangeable)
	1-13	RTHM-A123WRZZ	Thermal cut-out
	1-14	RV-MZA310WRZZ	Magnetron
	1-15	FDTCTA209WRKZ	AH sensor
	2-4	GCABUA775WRPZ	Outer case cabinet
	4-1	PHOK-A118WRFZ	Latch hook
	4-13	GCOVHA419WRFZ	Choke cover
	4-16	PCOVPA361WREZ	Waveguide cover
	5-1	FDORFA343WRTZ	Door panel
	5-2	PSHEPA735WREZ	Sealer film
	5-3	FPNL-A043WRKZ	Door screen assembly
	5-3-1	PSHEPA742WREZ	Key sheet
	5-4	GWAKPA737WRFZ	Door frame
	5-5	JHNDPA188WRTZ	Handle
	5-7	LSTPPA193WRFZ	Latch head
	5-8	MSPRTA187WRE0	Latch spring
	5-9	LHLD-A226WRFZ	LCD holder
	5-17	PSHEPA672WRE0	LED sheet
	6-1	FROLPA095WRKZ	Turntable support
	6-2	NTNT-A099WRE0	Turntable tray
	6-10	TINSEA863WRRZ	Instruction book
R-1380	1-1	FH-DZB012MRY0	High voltage rectifier assembly
	1-2	RC-QZA234WRE0	High voltage capacitor
	1-3	QFS-TA013WRE0	Temperature fuse (magnetron)
	1-4	RMOTDA211WRE0	Turntable motor
	1-5	RMOTDA214WRE0	Stirrer motor
	1-6	RTHM-0044MRE0	Thermal cut-out (hood fan)
	1-7	RTRN-B062MRE0	Power transformer
	1-8	RV-MZA281WRE0	Magnetron
	1-10	QSW-MA085WRE0	Secondary interlock and door sensing switches
	1-11	FFS-BA016/KIT	Monitor switch with fuse assembly
	1-14	FMOTEA402WRK0	Hood fan motor

MODEL	REF	PART CODE	DESCRIPTION
	1-15	RMOTEA346WRE0	Fan motor
	1-16	RLMPTA068WRE0	Oven lamp
	1-17	RTHM-A070WRE0	Thermal cut-out (cavity)
	2-2	PDIF-B018MRF0	Hood exhaust louver
	2-5	GCABUB084MRP0	Outer case cabinet
	2-7	FANGKB009MRY0	Hood lamp glass assembly
	2-7-2	PGLSPB004MRE0	Hood lamp glass
	3-1	DPWBFB081MRU0	Control unit
	3-2	FPNLCB205MRK0	Control panel sub. Assembly
	3-2-1	FUNTKB153MRE0	Key unit
	3-2-2	GMADIB030MRF0	Display window
	4-1	FFTA-B003MRK0	Exhaust damper assembly
	4-2	FROLPB025MRK0	Turntable support assembly
	4-3	NTNT-A090WRE0	Turntable tray
	4-5	FCOVPB016MRK0	Stirrer cover assembly
	4-6	FFAN-B009MRK0	Stirrer fan assembly
	4-9	PHOK-B017MRF0	Latch hook
	4-13	PCOVPB065MRP0	Oven lamp cover
	5	CDORFB245MRK0	Door assembly
	5-1	FDORFB060MRT0	Door panel assembly
	5-2	FCOV-B166MRK0	Door frame assembly
	5-2-1	PGLSPB012MRE0	Front door glass
	5-2-2	LSTPPB030MRF0	Latch head
	5-2-4	MSPRTA046WRE0	Latch spring
	5-3	FCOVHB005MRK0	Choke cover assembly
	5-4	PSHEPB024MRE0	Sealer film
	5-5	JHNDPB007MRF0	Door handle assembly
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB227MRR0	Installation instructions
	6-3	TINSEB223MRR0	Operation manual
	6-4	TINSKB047MRR0	Top template
	6-5	TINSKB048MRR0	Wall template
	6-12	PFIL-B004MRE0	Charcoal filter
	6-13	PFIL-B002MRE0	Grease filter
R-1381	1-1	FH-DZB012MRY0	High voltage rectifier assembly
	1-2	RC-QZA234WRE0	High voltage capacitor
	1-3	QFS-TA013WRE0	Temperature fuse (magnetron)
	1-4	RMOTDA211WRE0	Turntable motor
	1-5	RMOTDA214WRE0	Stirrer motor
	1-6	RTHM-0044MRE0	Thermal cut-out (hood fan)
	1-7	RTRN-B062MRE0	Power transformer
	1-8	RV-MZA281WRE0	Magnetron
	1-10	QSW-MA085WRE0	Secondary interlock and door sensing switches
	1-11	FFS-BA016/KIT	Monitor switch with fuse assembly

MODEL	REF	PART CODE	DESCRIPTION
	1-14	FMOTEA402WRK0	Hood fan motor
	1-15	RMOTEA346WRE0	Fan motor
	1-16	RLMPTA068WRE0	Oven lamp
	1-17	RTHM-A070WRE0	Thermal cut-out (cavity)
	2-2	PDIF-B019MRF0	Hood exhaust louver
	2-5	GCABUB090MRP0	Outer case cabinet
	2-7	FANGKB010MRY0	Hood lamp glass assembly
	2-7-2	PGLSPB004MRE0	Hood lamp glass
	3-1	DPWBFB081MRU0	Control unit
	3-2	FPNLCB211MRK0	Control panel sub. Assembly
	3-2-1	FUNTKB159MRE0	Key unit
	3-2-2	GMADIB030MRF0	Display window
	4-1	FFTA-B003MRK0	Exhaust damper assembly
	4-2	FROLPB025MRK0	Turntable support assembly
	4-3	NTNT-A090WRE0	Turntable tray
	4-5	FCOVPB016MRK0	Stirrer cover assembly
	4-6	FFAN-B009MRK0	Stirrer fan assembly
	4-9	PHOK-B017MRF0	Latch hook
	4-13	PCOVPB065MRP0	Oven lamp cover
	5	CDORFB246MRK0	Door assembly
	5-1	FDORFB060MRT0	Door panel assembly
	5-2	FCOV-B165MRK0	Door frame assembly
	5-2-1	PGLSPB014MRE0	Front door glass
	5-2-2	LSTPPB030MRF0	Latch head
	5-2-4	MSPRTA046WRE0	Latch spring
	5-3	FCOVHB005MRK0	Choke cover assembly
	5-4	PSHEPB024MRE0	Sealer film
	5-5	JHNDPB008MRF0	Door handle assembly
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB227MRR0	Installation instructions
	6-3	TINSEB223MRR0	Operation manual
	6-4	TINSKB047MRR0	Top template
	6-5	TINSKB048MRR0	Wall template
	6-12	PFIL-B004MRE0	Charcoal filter
	6-13	PFIL-B002MRE0	Grease filter
R-1754	1-1	RMOTEA346WRE0	Fan motor
	1-2	RLMPTA068WRE0	Oven lamp
	1-3	QFS-TA013WRE0	Temperature fuse (magnetron)
	1-4	RMOTDA211WRE0	Turntable motor
	1-5	RMOTDA214WRE0	Stirrer motor
	1-6	RTHM-0044MRE0	Thermal cut-out (hood fan)
	1-7	RTHM-A070WRE0	Thermal cut-out (oven)
	1-8	RV-MZA309WRZZ	Magnetron
	1-10	QSW-MA085WRE0	Secondary interlock/primary interlock switches

MODEL	REF	PART CODE	DESCRIPTION
	1-11	FFS-BA016/KIT	Monitor switch
	1-14	FMOTEA402WRK0	Hood fan motor
	1-15	FDTCTA201WRK0	AH sensor
	1-16	DPWBFC071WRUZ	Inverter unit
	2-2	FDIF-B001MRK0	Hood exhaust louver
	2-5	GCABUB084MRP0	Outer case cabinet
	2-7	FANGKB009MRY0	Hood lamp glass assembly
	2-7-2	PGLSPB004MRE0	Hood lamp glass
	2-8	PCOVPB091MRT0	Base cover
	3-1	DPWBFB097MRU0	Power supply unit
	3-3	FPNLCB322MRK0	Control panel sub. Assembly
	3-3-1	FUNTKB264MRE0	Key unit
	4-1	FFTA-B005MRK0	Exhaust damper assembly
	4-2	FROLPB025MRK0	Turntable support assembly
	4-3	NTNT-A090WRE0	Turntable tray
	4-5	FCOVPB016MRK0	Stirrer cover assembly
	4-6	FFAN-B012MRK0	Stirrer fan assembly
	4-9	PHOK-B017MRF0	Latch hook
	4-13	PCOVPB065MRP0	Oven lamp cover
	5	CDORFB256MRK0	Door assembly
	5-1	FDORFB060MRT0	Door panel assembly
	5-2	FCOV-B162MRK0	Door frame assembly
	5-2-1	PGLSPB020MRE0	Front door glass
	5-2-2	LSTPPB030MRF0	Latch head
	5-2-4	MSPRTA046WRE0	Latch spring
	5-3	FCOVHB005MRK0	Choke cover assembly
	5-4	PSHEPB024MRE0	Sealer film
	5-5	FHNDPB006MRK0	Door handle assembly
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB227MRR0	Installation instructions
	6-3	TINSEB228MRR0	Operation manual
	6-4	TINSKB047MRR0	Top template
	6-5	TINSKB048MRR0	Wall template
	6-12	PFIL-B004MRE0	Charcoal filter
	6-13	PFIL-B002MRE0	Grease filter
Commonly used parts for 1999 models			
R-21JC	1-1	FFS-BA015WRK0	Monitor fuse and monitor switch assembly
	1-2	QSW-MA051WRE0	Door sensing switch
	1-3	QSW-MA135WRE0	Secondary interlock switch
	1-4	FACCDA078WRE0	Power supply cord
	1-5	FH-DZA084WRK0	High voltage rectifier assembly
	1-6	RC-QZA242WRE0	High voltage capacitor

MODEL	REF	PART CODE	DESCRIPTION
	1-7	RMOTEA376WRE0	Fan motor
	1-10	RLMPTA072WRE0	Oven lamp
	1-11	RMOTDA233WRE0	Antenna motor
	1-12	RTHM-A080WRE0	Thermal cut-out 145 deg. (MAG)
	1-13	RTHM-A096WRE0	Thermal cut-out 125 deg. (OVEN)
	1-14	RTRN-A570WRE0	Power transformer
	1-15	RV-MZA197WRE0	Magnetron
	2-1	GCABUA674WRP0	Outer case cabinet
	3-1	CPWBFA804WRK0	Control unit assembly
	3-2	FPNLCB434WRK0	Panel sub assembly
	3-2-1	HPNLTA137WRE0	Timer sheet
	3-2-2	GCOVAA260WRP0	C/P case
	4-1	FGLSPA062WRE0	Ceramic shelf
	4-3	MLEVPA227WRF0	Latch switch lever A
	4-4	MLEVPA228WRF0	Latch switch lever B
	4-5	MLEVPA229WRF0	Latch switch lever C
	4-6	MSPRCA108WRE0	Latch lever spring
	4-7	MSPRTA191WRE0	Switch lever B spring
	4-8	PHOK-A107WRF0	Latch hook
	4-12	NFANJA029WRE0	Fan blade
	4-14	FPLT-A007WRY0	Stirrer antenna assembly
	5-1	FDORFA322WRT0	Door panel assembly
	5-2	PSHEPA649WRE0	Sealer film
	5-3	FANGKA206WRY0	Latch angle assembly
	5-4	FCOV-A002WRK0	Door case assembly
	5-4-3	PGLSPA516WRE0	Front door glass
	5-5	GWAKPA580WRM0	Door handle
	5-6	JHNDMA040WRW0	Handle lever
	5-7	LANGKA874WRW0	Latch lever
	5-8	LSTPPA181WRF0	Latch head
	5-9	MSPRTA190WRE0	Latch spring
	6-1	TINSEA802WRR0	Instruction book
R-25JT	1-1	FH-HZA064WRE	Oven Thermistor(2)
	1-3	RV-MZA295WRE0	Magnetron
	1-4	RMOTEA391WRE0	Blower motor
	1-6	FACCDA084WRE0	Power supply cord
	1-7	FH-HZA070WRE0	Oven Thermistor(1) & Magnetron Thermistor
	1-8	FW-QZA117WRK0	High voltage rectifier assembly
	1-9	FFS-BA015WRK0	Monitor switch and fuse 20A assembly
	1-10	QSW-MA020WRE0	Voltage select switch
	1-11	QSW-MA051WRE0	Secondary interlock switch/ Door sensing switch
	1-12	RC-QZA260WRE0	High voltage capacitor

MODEL	REF	PART CODE	DESCRIPTION
	1-13	RLMPTA030WRE0	Oven lamp
	1-14	RMOTEA209WRE0	Stirrer motor
	1-15	QFS-TA014WRE0	Temperature fuse 150 deg. (MAG)
	1-16	QFS-TA015WRE0	Temperature fuse 120 deg. (OVEN)
	1-17	RTRN-A594WRE0	Power transformer
	2-6	GCABUA523WRP0	Outer case cabinet
	3-1	DPWBFB975WRU0	Control unit
	3-2	FPNLCB468WRK0	Control panel frame with key unit
	3-2-1	FUNTKA773WRE0	Key unit
	4-5	MLEVPA153WRF0	Switch lever A
	4-6	MLEVPA154WRF0	Switch lever B
	4-7	MLEVPA155WRF0	Switch lever C
	4-8	MSPRCA075WRE0	Switch spring A
	4-9	MSPRTA076WRE0	Switch spring B
	4-10	PHOK-A081WRF0	Latch hook
	4-14	FGLSPA063WRY0	Ceramic shelf
	4-15	FPLT-A008WRY0	Stirrer antenna upper assembly
	4-16	FPLT-A009WRY0	Stirrer antenna lower assembly
	5	DDORFA746WRK0	Door assembly
	5-1	FDORFA289WRT0	Door panel assembly
	5-2	GCOVAA242WRY0	Door case
	5-3	FHNDMA011WRY0	Door lever assembly
	5-5	JHNDPA169WRM0	Door handle
	5-8	PGLSPA5457WRE0	Door glass
	5-10	PSHEPA428WRE0	Sealer film
	5-17	MLEVPA220WRFO	Head lever
	5-18	MSPRCA097WRE0	Latch spring
	6-1	TINSEA814WRR0	Instruction manual
R-21JV	1-1	FFS-BA015WRK0	Monitor fuse and monitor switch assembly
	1-2	QSW-MA051WRE0	Door sensing switch
	1-3	QSW-MA135WRE0	Secondary interlock switch
	1-4	FACCDA078WRE0	Power supply cord
	1-5	FH-DZA084WRK0	High voltage rectifier assembly
	1-6	RC-QZA242WRE0	High voltage capacitor
	1-7	RMOTEA376WRE0	Fan motor
	1-10	RLMPTA072WRE0	Oven lamp
	1-11	RMOTDA233WRE0	Antenna motor
	1-12	RTHM-A080WRE0	Thermal cut-out 145 deg. (MAG)
	1-13	RTHM-A096WRE0	Thermal cut-out 125 deg. (OVEN)
	1-14	RTRN-A570WRE0	Power transformer
	1-15	RV-MZA197WRE0	Magnetron
	2-1	GCABUA674WRP0	Outer case cabinet
	3-1	CPWBFA805WRK0	Control unit

MODEL	REF	PART CODE	DESCRIPTION
	3-2	FPNLCB435WRK0	Control panel frame with key unit
	3-2-1	FUNTKA881WRE0	Key unit
	3-2-2	GCOVAA264WRP0	C/P case
	4-1	FGLSPA062WRE0	Ceramic shelf
	4-3	MLEVPA227WRF0	Latch switch lever A
	4-4	MLEVPA228WRF0	Latch switch lever B
	4-5	MLEVPA229WRF0	Latch switch lever C
	4-6	MSPRCA108WRE0	Latch lever spring
	4-7	MSPRTA191WRE0	Switch lever B spring
	4-8	PHOK-A107WRF0	Latch hook
	4-12	NFANJA029WRE0	Fan blade
	4-14	FPLT-A007WRY0	Stirrer antenna assembly
	5-1	FDORFA322WRT0	Door panel assembly
	5-2	PSHEPA649WRE0	Sealer film
	5-3	FANGKA206WRY0	Latch angle assembly
	5-4	FCOV-A002WRK0	Door case assembly
	5-4-3	PGLSPA516WRE0	Front door glass
	5-5	GWAKPA580WRM0	Door handle
	5-6	JHNDMA040WRW0	Handle lever
	5-7	LANGKA874WRW0	Latch lever
	5-8	LSTPPA181WRF0	Latch head
	5-9	MSPRTA190WRE0	Latch spring
	6-1	TINSEA802WRR0	Instruction book

MODEL	REF	PART CODE	DESCRIPTION
R-203CW	1-1	QSW-MA131WRE0	2nd interlock switch / Door sensing switch
	1-2	FFS-BA020WRK0	C/T fuse and monitor switch assembly
	1-3	FACCDA079WRE0	Power supply cord
	1-5	FH-DZA081WRK0	High voltage rectifier
	1-6	RC-QZA200WRE0	High voltage capacitor
	1-6	RC-QZA201WRE0	High voltage capacitor(interchangeable)
	1-7	RMOTEA338WRE0	Fan motor
	1-7	RMOTEA355WRE0	Fan motor(interchangeable)
	1-8	RV-MZA266WRE0	Magnetron
	1-8	RV-MZA282WRE0	Magnetron(interchangeable)
	1-9	RLMPTA030WRE0	Oven lamp
	1-10	RMOTDA211WRE0	Turntable motor
	1-10	RMOTDA186WRE0	Turntable motor(interchangable)
	1-11	RTHM-A078WRE0	Thermal cut-out 125 deg. (OVEN)
	1-12	RTRN-A561WRE0	Power transformer
	2-1	GCABUA696WRP0	Outer case cabinet
	3-1	CPWBFA773WRK0	Control unit
	3-2	FPNLCB426WRK0	Control panel frame with key unit and LCD
	3-2-1	FUNTKA928WRE0	Key unit
	3-2-2	RLCDSA045DRE0	LCD
	4-1	PHOK-A105WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	5-1	FDORFA321WRT0	Door panel
	5-2	GWAKPA628WRF0	Door frame
	5-3	HPNL-A686WRR0	Door screen
	5-4	LSTPPA175WRF0	Latch head
	5-5	MSPRTA084WRE0	Latch spring
	5-6	PSHEPA622WRE0	Sealer film
	6-1	FROLPA089WRK0	Turntable support
	6-2	NTNT-A094WRE0	Turntable tray
	6-3	TINSEA794WRR0	Instruction book
R-303CW	1-1	QSW-MA137WRE0	2nd interlock switch / door sensing switch
	1-3	FFS-BA023WRK0	Monitor fuse and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 deg.
	1-5	FACCDA082WRE0	Power supply cord
	1-5	FACCDA081WRE0	Power supply cord (interchangeable)
	1-6	FH-DZA088WRK0	High voltage rectifier assembly
	1-7	RC-QZA173WRE0	High voltage capacitor
	1-7	RC-QZA211WRE0	High voltage capacitor (Interchangeable)

MODEL	REF	PART CODE	DESCRIPTION
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor(Interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 deg.
	1-14	RTRN-A576WRE0	Power transformer
	2-1	GCABUA690WRP0	Outer case cabinet
	3-1	CPWBFA821WRK0	Power unit
	3-2	DPWBFB914WRK0	CPU Unit
	3-3	FPNLCB437WRK0	Control panel frame w/key unit
	3-3-1	FUNTKA935WRE0	Key unit
	3-4	JBTN-B099WRF0	Open button
	3-5	MSPRCA050WRE0	Open button spring
	4-3	PHOK-A114WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	4-11	MLEVPA233WRF0	Switch lever
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA610WRR0	Door frame
	5-4	HPNL-A716WRR0	Door screen
	5-5	LSTPPA188WRF0	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA807WRR0	Instruction book
R-305CW	1-1	QSW-MA137WRE0	2nd interlock switch / door sensing switch
	1-3	FFS-BA023WRK0	Monitor fuse and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 deg.
	1-5	FACCDA081WRE0	Power supply cord
	1-5	FACCDA082WRE0	Power supply cord (interchangeable)
	1-6	FH-DZA088WRK0	High voltage rectifier assembly
	1-7	RC-QZA173WRE0	High voltage capacitor
	1-7	RC-QZA211WRE0	High voltage capacitor (Interchangeable)
	1-8	RV-MZA288WRE0	Magnetron
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp(Interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor(Interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 deg.
	1-14	RTRN-A580WRE0	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	2-1	GCABUA690WRP0	Outer case cabinet
	3-1	CPWBFA821WRK0	Power unit
	3-2	DPWBFB914WRK0	CPU Unit
	3-3	FPNLCB429WRK0	Control panel frame w/key unit
	3-3-1	FUNTKA929WRE0	Key unit
	3-4	JBTN-B099WRF0	Open button
	3-5	MSPRCA050WRE0	Open button spring
	4-3	PHOK-A114WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	4-11	MLEVPA233WRF0	Switch lever
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA610WRR0	Door frame
	5-4	HPNL-A716WRR0	Door screen
	5-5	LSTPPA188WRF0	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-2	NTNT-A084WRE0	Turntable tray(Interchangeable)
	6-8	TINSEA791WRR0	Instruction book
R-308CW R-310CW/CK	1-1	QSW-MA137WRE0	2nd interlock switch / door sensing switch
	1-3	FFS-BA023WRK0	Monitor fuse and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 deg.
	1-5	FACCDA081WRE0	Power supply cord
	1-5	FACCDA082WRE0	Power supply cord (interchangeable)
	1-6	FH-DZA088WRK0	High voltage rectifier assembly
	1-7	RC-QZA173WRE0	High voltage capacitor
	1-7	RC-QZA211WRE0	High voltage capacitor (Interchangeable)
	1-8	RV-MZA288WRE0	Magnetron
	1-8	RV-MZA279WRE0	Magnetron(Interchangeable)
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp(Interchangeable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor(Interchangeable)
	1-13	RTHM-A080WRE0	Thermal cut-out 145 deg.
	1-14	RTRN-A576WRE0	Power transformer
	2-1	GCABUA687WRP0	Outer case cabinet [R-310CK]
	2-1	GCABUA690WRP0	Outer case cabinet [R-308CW / 310CW]
	3-1	CPWBFA821WRK0	Power unit

MODEL	REF	PART CODE	DESCRIPTION
	3-2	DPWBFB914WRK0	CPU Unit
	3-3	FPNLCB414WRK0	Control panel frame w/key unit [R-310CK]
	3-3	FPNLCB416WRK0	Control panel frame w/key unit [R-310CW]
	3-3	FPNLCB421WRK0	Control panel frame w/key unit [R-308CW]
	3-3-1	FUNTKA915WRE0	Key unit [R-310CK]
	3-3-1	FUNTKA917WRE0	Key unit [R-310CW]
	3-3-1	FUNTKA922WRE0	Key unit [R-308CW]
	3-4	JBTN-B097WRF0	Open button [R-310CK]
	3-4	JBTN-B099WRF0	Open button [R-308CW / 310CW]
	3-5	MSPRCA050WRE0	Open button spring
	4-3	PHOK-A114WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	4-11	MLEVPA233WRF0	Switch lever
	4-14	PCOVPA349WRE0	Waveguide cover
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA606WRR0	Door frame [R-310CK]
	5-3	GWAKPA610WRR0	Door frame [R-310CW / 308CW]
	5-4	HPNL-A714WRR0	Door screen [R-310CK]
	5-4	HPNL-A716WRR0	Door screen [R-310CW / 308CW]
	5-5	LSTPPA188WRF0	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-2	NTNT-A084WRE0	Turntable tray(Interchangeable)
	6-8	TINSEA791WRR0	Instruction book
R320BG	1-1	QSW-MA131WRE0	2nd interlock switch / Door sensing switch
	1-1	QSW-MA110WRE0	Secondary interlock switch / Door sensing switch(interchangeable)
	1-3	FFS-BA021WRK0	Monitor fuse and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 deg. (OVEN)
	1-5	FACCDA077WRE0	Power supply cord
	1-6	FH-DZA083WRK0	High voltage rectifier assembly
	1-7	RC-QZA236WRE0	High voltage capacitor
	1-8	RV-MZA267WRE0	Magnetron
	1-9	RMOTEA355WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-12	RMOTDA161WRE0	Turntable motor
	1-13	RTHM-A048WRE0	Thermal cut-out 170 deg. (MAG)
	1-14	RTRN-A569WRE0	Power transformer

MODEL	REF	PART CODE	DESCRIPTION
	2-1	GCABUA693WRP0	Outer case cabinet
	3-1	CPWBFA776WRK0	Power unit
	3-2	DPWBFB753WRK0	CPU Unit
	3-3	FPNLCB415WRK0	Control panel frame with key unit
	3-3-1	FUNTKA916WRE0	Key unit
	3-3-2	JBTN-B098WRF0	Open button
	3-3-3	MSPRCA050WRE0	Open button spring
	4-3	PHOK-A106WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	5-1	FDORFA318WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA608WRR0	Door frame
	5-4	HPNL-A684WRR0	Door screen
	5-5	LSTPPA139WRF0	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A084WRE0	Turntable tray
	6-8	TINSEA777WRR0	Instruction book
R320CD/CK/CW	1-1	QSW-MA137WRE0	2nd interlock switch / Door sensing switch
R330CK/CW	1-3	FFS-BA023WRK0	Monitor fuse and monitor switch assembly
	1-4	RTHM-A078WRE0	Thermal cut-out 125 deg.
	1-5	FACCDA081WRE0	Power supply cord
	1-5	FACCDA082WRE0	Power supply cord (Interchangable)
	1-6	FH-DZA088WRK0	High voltage rectifier assembly
	1-7	RC-QZA173WRE0	High voltage capacitor
	1-7	RC-QZA211WRE0	High voltage capacitor(Interchangable)
	1-8	RV-MZA288WRE0	Magnetron
	1-8	RV-MZA279WRE0	Magnetron(Interchangable)
	1-9	RMOTEA383WRE0	Fan motor
	1-11	RLMPTA068WRE0	Oven lamp
	1-11	RLMPTA030WRE0	Oven lamp(Interchangable)
	1-12	RMOTDA161WRE0	Turntable motor
	1-12	RMOTDA211WRE0	Turntable motor(Interchangable
	1-13	RTHM-A080WRE0	Thermal cut-out 145 deg.
	1-14	RTRN-A576WRE0	Power transformer
	2-1	GCABUA702WRP0	Outer case cabinet(R320CD)
	2-1	GCABUA687WRP0	Outer case cabinet(R320CK / R330CK)
	2-1	GCABUA690WRP0	Outer case cabinet(R320CW / R330CW)
	3-1	CPWBFA775WRK0	Power unit
	3-2	DPWBFB917WRK0	CPU Unit(R320CD /CK / CW)
	3-2	DPWBFB918WRK0	CPU Unit(R330CK / CW)
	3-3	FPNLCB422WRK0	Control panel frame with key

MODEL	REF	PART CODE	DESCRIPTION
			unit(R320CK)
	3-3	FPNLCB423WRK0	Control panel frame with key unit(R330CK)
	3-3	FPNLCB424WRK0	Control panel frame with key unit(R320CW)
	3-3	FPNLCB425WRK0	Control panel frame with key unit(R330CW)
	3-3	FPNLCB432WRK0	Control panel frame with key unit(R320CD)
	3-3-1	FUNTKA923WRE0	Key unit(R320CK)
	3-3-1	FUNTKA924WRE0	Key unit(R330CK)
	3-3-1	FUNTKA925WRE0	Key unit(R320CW)
	3-3-1	FUNTKA926WRE0	Key unit(R330CW)
	3-3-1	FUNTKA934WRE0	Key unit(R320CD)
	3-4	JBTN-B100WRF0	Open button(R320CK / R330CK)
	3-4	JBTN-B101WRF0	Open button(R320CW / R330CW)
	3-4	JBTN-B102WRF0	Open button(R320CD)
	3-5	MSPRCA050WRE0	Open button spring
	4-3	PHOK-A1114WRF0	Latch hook
	4-5	NFANJA029WRE0	Fan blade
	5-1	FDORFA332WRT0	Door panel
	5-2	PSHEPA382WRE0	Sealer film
	5-3	GWAKPA626WRR0	Door frame(R320CD)
	5-3	GWAKPA615WRR0	Door frame(R320CK / R330CK)
	5-3	GWAKPA617WRR0	Door frame(R320CW / R330CW)
	5-4	HPNL-A720WRR0	Door screen(R320CD)
	5-4	HPNL-A717WRR0	Door screen(R320CK / R330CK)
	5-4	HPNL-A719WRR0	Door screen(R320CW / R330CW)
	5-5	LSTPPA188WRF0	Latch head
	5-6	MSPRTA187WRE0	Latch spring
	6-1	FROLPA079WRK0	Turntable support
	6-2	NTNT-A079WRE0	Turntable tray
	6-8	TINSEA792WRR0	Instruction book(R320CD / CK / CW)
	6-8	TINSEA793WRR0	Instruction book(R320CK / CW)
R-405CK/ R410CK / CW	1-1	RC-QZA234WRE0	H.V. Capacitor (R-405CK)
	1-1	RC-QZA018WRE0	H.V. Capacitor (R-410CK / R-410CW)
	1-2	FH-DZB007MRY0	H.V. Diode Assembly(R-405CK)
	1-2	FH-DZB008MRY0	H.V. Diode Assembly(R-410CK / R-410CW)
	1-4	RLMPTA068WRE0	Oven Lamp
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse

MODEL	REF	PART CODE	DESCRIPTION
			Assembly (20A-250VAC)
	1-8	QSW-MA110WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB014MRE0	Cavity Temperature Fuse (150 degrees C)
	1-10	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)
	1-11	RV-MZA290WRE0	Magnetron(R-405CK)
	1-11	RV-MZA255WRE0	Magnetron(R-410CK / R-410CW)
	1-12	RMOTDA211/KIT	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer
	1-14	FACCDB003MRE0	Power cord
	2-3	PHOK-B018MRF0	Latch Hook
	2-6	MLEVPB016MRF0	Latch Lever
	2-8	NFANPB001MRE0	Fan Blade
	2-11	PCOVPB073MRP0	Waveguide Cover
	2-12	GCABUB064MRP0	Outer case cabinet(R-405CK / R-410CK)
	2-12	GCABUB088MRP0	Outer case cabinet(R-410CW)
	2-13	FROLPB025MRK0	T.T. Roller Assembly
	2-14	NTNT-A095WRE0	T.T. Tray
	3-1	CPWBFB030MRU0	Control Unit
	3-3	FPNLCB229MRK0	Control panel assembly(R-405CK)
	3-3	FPNLCB232MRK0	Control panel assembly(R-410CK)
	3-3	FPNLCB233MRK0	Control panel assembly(R-410CW)
	3-4	FUNTKB181MRE0	Key Unit(R-405CK)
	3-4	FUNTKB184MRE0	Key Unit(R-410CK)
	3-4	FUNTKB185MRE0	Key Unit(R-410CW)
	3-5	JBTN-B086MRF0	Open Button(R-405CK / R-410CK)
	3-5	JBTN-B087MRF0	Open Button(R-410CW)
	3-6	MSPRTA050WRE0	Button Spring
	4-1	FCOV-B136MRK0	Door Screen Assembly (R-405CK / R-410CK)
	4-1	FCOV-B137MRK0	Door Screen Assembly (R-410CW)
	4-2	FDORFB062MRT0	Door Panel
	4-3	PSHEPB021MRE0	Sealer Film
	4-4	GCOVHB038MRF0	Choke Cover
	4-5	LSTPPB021MRF0	Latch Head
	4-6	MSPRTA046WRE0	Latch Spring
	4-7	HPNL-B087MRE0	Door Screen (R-405CK / R-410CK)
	4-7	HPNL-B088MRE0	Door Screen (R-410CW)
	5-3	TINSEB200MRR0	Operation manual (R-405CK)
	5-3	TINSEB204MRR0	Operation manual (R-410CK / R-410CW)
R408CW	1-1	RC-QZA018WRE0	H.V. Capacitor
R409CK	1-2	FH-DZB008MRY0	H.V. Diode Assembly
	1-4	RLMPTA068WRE0	Oven Lamp

MODEL	REF	PART CODE	DESCRIPTION
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse Assembly (20A-250VAC)
	1-8	QSW-MA110WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB014MRE0	Cavity Temperature Fuse (150 degrees C)
	1-10	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)
	1-11	RV-MZA290WRE0	Magnetron
	1-12	RMOTDA211/KIT	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer
	1-14	FACCDB003MRE0	Power cord
	2-3	PHOK-B018MRF0	Latch Hook
	2-6	MLEVPB016MRF0	Latch Lever
	2-8	NFANPB001MRE0	Fan Blade
	2-11	PCOVPB073MRP0	Waveguide Cover
	2-12	GCABUB064MRP0	Outer case cabinet(R-409CK)
	2-12	GCABUB088MRP0	Outer case cabinet(R-408CW)
	2-13	FROLPB025MRK0	T.T. Roller Assembly
	2-14	NTNT-A095WRE0	T.T. Tray
	3-1	CPWBFB030MRU0	Control Unit
	3-3	FPNLCB230MRK0	Control panel assembly(R-408CW)
	3-3	FPNLCB231MRK0	Control panel assembly(R-409CK)
	3-4	FUNTKB182MRE0	Key Unit(R-408CW)
	3-4	FUNTKB183MRE0	Key Unit(R-409CK)
	3-5	JBTN-B087MRF0	Open Button(R-408CW)
	3-5	JBTN-B086MRF0	Open Button(R-409CK)
	3-6	MSPRTA050WRE0	Button Spring
	4-1	FCOV-B136MRK0	Door Screen Assembly (R-409CK)
	4-1	FCOV-B137MRK0	Door Screen Assembly (R-408CW)
	4-2	FDORFB062MRT0	Door Panel
	4-3	PSHEPB021MRE0	Sealer Film
	4-4	GCOVHB038MRF0	Choke Cover
	4-5	LSTPPB021MRF0	Latch Head
	4-6	MSPRTA046WRE0	Latch Spring
	4-7	HPNL-B087MRE0	Door Screen (R-409CK)
	4-7	HPNL-B088MRE0	Door Screen (R-408CW)
	5-3	TINSEB204MRR0	Operation manual
R420CK	1-1	RC-QZA018WRE0	H.V. Capacitor
R420CW	1-2	FH-DZB008MRY0	H.V. Diode Assembly
	1-4	RLMPTA068WRE0	Oven Lamp
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse Assembly (20A-250VAC)

MODEL	REF	PART CODE	DESCRIPTION
	1-8	QSW-MA085WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)
	1-10	QFS-TB014MRE0	Cavity Temperature Fuse (150 degrees C)
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA211/KIT	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer
	1-14	FACCDB003MRE0	Power cord
	2-3	GCABUB064MRP0	Outer case cabinet(R-420CK)
	2-3	GCABUB088MRP0	Outer case cabinet(R-420CW)
	3-1	CPWBFB031MRU0	Control Unit
	3-2	FPNLCB241MRK0	Control panel frame w/key unit(R-420CK)
	3-2	FPNLCB242MRK0	Control panel frame(R-420CW)
	3-2-1	FUNTKB193MRE0	Key Unit(R-420CK)
	3-2-1	FUNTKB194MRE0	Key Unit(R-420CW)
	3-2-2	JBTN-B087MRF0	Open Button(R-420CW)
	3-2-2	JBTN-B086MRF0	Open Button(R-420CK)
	3-2-3	MSPRTA050WRE0	Open Button Spring
	4-3	PHOK-B018MRF0	Latch Hook
	4-4	MLEVPB016MRF0	Switch Lever
	4-6	NFANPB001MRE0	Fan Blade
	4-9	PCOVPB073MRP0	Waveguide Cover
	5-1	FCOV-B136MRK0	Door Frame Assembly (R-420CK)
	5-1	FCOV-B137MRK0	Door Screen Assembly (R-420CW)
	5-1-1	LSTPPB021MRF0	Latch Head
	5-1-2	MSPRTA046WRE0	Latch Spring
	5-2	FDORFB062MRT0	Door Panel
	5-3	PSHEPB021MRE0	Sealer Film
	5-4	GCOVHB038MRF0	Choke Cover
	5-5	HPNL-B087MRE0	Door Screen (R-420CK)
	5-5	HPNL-B088MRE0	Door Screen (R-420CW)
	6-4	FROLPB025MRK0	T.T. Support
	6-5	NTNT-A095WRE0	T.T. Tray
	6-8	TINSEB205MRR0	Operation manual
R430CS	1-1	RC-QZA018WRE0	H.V. Capacitor
	1-2	FH-DZB008MRY0	H.V. Diode Assembly
	1-4	RLMPTA068WRE0	Oven Lamp
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse Assembly (20A-250VAC)
	1-8	QSW-MA085WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)

MODEL	REF	PART CODE	DESCRIPTION
	1-10	QFS-TB014MRE0	Cavity Temperature Fuse (150 degrees C)
	1-11	RV-MZA293WRE0	Magnetron
	1-12	RMOTDA211/KIT	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer
	1-14	FACCDB003MRE0	Power cord
	2-3	GCABUB091MRP0	Outer case cabinet
	3-1	CPWBFB032MRU0	Control Unit
	3-2	FPNLCB261MRK0	Control panel frame w/key unit
	3-2-1	FUNTKB211MRE0	Key Unit
	3-2-2	JBTN-B091MRF0	Open Button
	3-2-3	MSPRTA050WRE0	Open Button Spring
	4-3	PHOK-B018MRF0	Latch Hook
	4-4	MLEVPB016MRF0	Switch Lever
	4-6	NFANPB001MRE0	Fan Blade
	4-9	PCOVPB073MRP0	Waveguide Cover
	5-1	FCOV-B148MRK0	Door Frame Assembly
	5-1-1	LSTPPB021MRF0	Latch Head
	5-1-2	MSPRTA046WRE0	Latch Spring
	5-2	FDORFB062MRT0	Door Panel
	5-3	PSHEPB021MRE0	Sealer Film
	5-4	GCOVHB038MRF0	Choke Cover
	6-4	FROLPB025MRK0	T.T. Support
	6-5	NTNT-A095WRE0	T.T. Tray
	6-8	TINSEB211MRR0	Operation manual
R-508CK/ R510CK / CW	1-1	RC-QZA018WRE0	H.V. Capacitor
	1-2	FH-DZB008MRY0	H.V. Rectifier Assembly
	1-4	RLMPTA068WRE0	Oven Lamp
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse Assembly (20A-250VAC)
	1-8	QSW-MA110WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)
	1-10	QFS-TB014MRE0	CavityTemperature Fuse (150 degrees C)
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA182WRE0	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer
	1-14	FACCDB003MRE0	Power supply cord
	2-3	GCABUB069MRP0	Outer case cabinet(R-508CK / R510CK)
	2-3	GCABUB089MRP0	Outer case cabinet(R-510CW)

MODEL	REF	PART CODE	DESCRIPTION
	3-1	CPWBFB030MRU0	Control Unit
	3-2	FPNLCB234MRK0	Control panel frame w/key unit(R-508CK)
	3-2	FPNLCB236MRK0	Control panel frame w/key unit(R-510CK)
	3-2	FPNLCB237MRK0	Control panel frame w/key unit(R-510CW)
	3-2-1	FUNTKB188MRE0	Key Unit(R-508CK)
	3-2-1	FUNTKB190MRE0	Key Unit(R-510CK)
	3-2-1	FUNTKB191MRE0	Key Unit(R-510CW)
	3-2-2	JBTN-B086MRF0	Open Button(R-508CK / R-510CK)
	3-2-2	JBTN-B087MRF0	Open Button(R-510CW)
	3-2-3	MSPRTA050WRE0	Button Spring
	4-3	PHOK-B018MRF0	Latch Hook
	4-4	MLEVPB016MRF0	Switch Lever
	4-6	NFANPB001MRE0	Fan Blade
	4-9	PCOVPB082MRP0	Waveguide Cover
	5-1	FCOV-B138MRK0	Door Frame Assembly (R-508CK / R-510CK)
	5-1	FCOV-B139MRK0	Door Frame Assembly (R-510CW)
	5-1-1	LSTPPB021MRF0	Latch Head
	5-1-2	MSPRTA046WRE0	Latch Spring
	5-2	FDORFB049MRT0	Door Panel
	5-3	PSHEPB016MRE0	Sealer Film
	5-4	GCOVHB039MRF0	Choke Cover
	5-5	HPNL-B089MRE0	Door Screen (R-508CK / R510CK)
	5-5	HPNL-B090MRE0	Door Screen (R-510CW)
	6-4	FROLPB025MRK0	T.T. Support
	6-5	NTNT-A099WRE0	T.T. Tray
	6-8	TINSEB200MRR0	Operation manual (R-508CK)
	6-8	TINSEB204MRR0	Operation manual (R-510CK / R-510CW)
R-519CK	1-1	RC-QZA018WRE0	H.V. Capacitor
R530CK / CW	1-2	FH-DZB008MRY0	H.V. Rectifier Assembly
	1-4	RLMPTA068WRE0	Oven Lamp
	1-5	RMOTEA346WRE0	Fan Motor
	1-7	FFS-BA016/KIT	Monitor Switch (V-16G-2C25) & Fuse Assembly (20A-250VAC)
	1-8	QSW-MA085WRE0	Sec. Interlock & Door sensing switch
	1-9	QFS-TB013MRE0	Magnetron Temperature Fuse (150 degrees C)
	1-10	QFS-TB014MRE0	CavityTemperature Fuse (150 degrees C)
	1-11	RV-MZA255WRE0	Magnetron
	1-12	RMOTDA182WRE0	T.T. Motor
	1-13	RTRN-B061MRE0	Power Transformer

MODEL	REF	PART CODE	DESCRIPTION
	1-14	FACCDB003MRE0	Power supply cord
	2-3	GCABUB069MRP0	Outer case cabinet(R-519CK)
	2-3	GCABUB083MRP0	Outer case cabinet(R-530CK)
	2-3	GCABUB089MRP0	Outer case cabinet(R-530CW)
	3-1	CPWBFB031MRU0	Control Unit(R-519CK)
	3-1	CPWBFB032MRU0	Control Unit(R-530CK / CW)
	3-2	FPNLCB249MRK0	Control panel frame w/key unit(R-530CK)
	3-2	FPNLCB250MRK0	Control panel frame w/key unit(R-530CW)
	3-2	FPNLCB262MRK0	Control panel frame w/key unit(R-519CK)
	3-2-1	FUNTKB199MRE0	Key Unit(R-530CK)
	3-2-1	FUNTKB200MRE0	Key Unit(R-530CW)
	3-2-1	FUNTKB212MRE0	Key Unit(R-519CK)
	3-2-2	JBTN-B086MRF0	Open Button(R-519CK/ R530CK)
	3-2-2	JBTN-B087MRF0	Open Button(R-530CW)
	3-2-3	MSPRTA050WRE0	Open Button Spring
	4-3	PHOK-B018MRF0	Latch Hook
	4-4	MLEVPB016MRF0	Switch Lever
	4-6	NFANPB001MRE0	Fan Blade
	4-9	PCOVPB082MRP0	Waveguide Cover
	5-1	FCOV-B138MRK0	Door Frame Assembly (R-519CK / R-530CK)
	5-1	FCOV-B139MRK0	Door Frame Assembly (R-530CW)
	5-1-1	LSTPPB021MRF0	Latch Head
	5-1-2	MSPRTA046WRE0	Latch Spring
	5-2	FDORFB049MRT0	Door Panel
	5-3	PSHEPB016MRE0	Sealer Film
	5-4	GCOVHB039MRF0	Choke Cover
	5-5	HPNL-B089MRE0	Door Screen (R-519CK / R530CK)
	5-5	HPNL-B090MRE0	Door Screen (R-530CW)
	6-4	FROLPB025MRK0	T.T. Support
	6-5	NTNT-A099WRE0	T.T. Tray
	6-8	TINSEB205MRR0	Operation manual (R-519CK)
	6-8	TINSEB206MRR0	Operation manual (R-530CK / R-530CW)
R1600/01/02	1-1	FH-DZB012MRY0	High voltage rectifier
	1-2	RC-QZA234WRE0	High voltage capacitor
	1-3	QFS-TA013WRE0	Temperature fuse 150 degrees C (Magnetron)
	1-4	RMOTDA211WRE0	Turntable motor
	1-5	RMOTDA214WRE0	Stirrer motot
	1-6	RTHM-B005MRE0	Thermal cut-out N.O. 60 degrees C (Hood fan)

MODEL	REF	PART CODE	DESCRIPTION
	1-7	RTRN-B062MRE0	Power Transformer
	1-8	RV-MZA281WRE0	Magnetron
	1-10	QSW-MA110WRE0	Secondary interlock and door sensing switches
	1-11	FFS-BA016/KIT	Monitor switch with fuse assembly
	1-12	FACCDB011MRE0	Power supply cord
	1-14	FMOTEA366WRK0	Hood fan motor
	1-15	RMOTEA346WRE0	Fan motor
	1-16	RLMPTA068WRE0	Oven lamp
	1-17	RTHM-A070WRE0	Thermal cut-out 145 degrees C (cavity)
	2-2	PDIF-B018MRF0	Hood exhaust louver(R1600)
	2-2	PDIF-B019MRF0	Hood exhaust louver(R1601)
	2-2	PDIF-B020MRF0	Hood exhaust louver(R1602)
	2-5	GCABUB084MRP0	Outer case cabinet(R1600)
	2-5	GCABUB090MRP0	Outer case cabinet(R1601)
	2-5	GCABUB086MRP0	Outer case cabinet(R1602)
	2-7	FANGKB009MRY0	Hood lamp glass assembly(R1600)
	2-7	FANGKB010MRY0	Hood lamp glass assembly(R1601)
	2-7	FANGKB011MRY0	Hood lamp glass assembly(R1602)
	2-7-1	LANGQB016MRP0	Hood lamp glass angle(R1600)
	2-7-1	LANGQB020MRP0	Hood lamp glass angle(R1601)
	2-7-1	LANGQB027MRP0	Hood lamp glass angle(R1602)
	2-7-2	PGLSPB004MRE0	Hood lamp glass
	3-1	DPWBFB033MRU0	Control unit
	3-2	FPNLCB256MRK0	Control panel sub. Assembly(R1600)
	3-2	FPNLCB257MRK0	Control panel sub. Assembly(R1601)
	3-2	FPNLCB258MRK0	Control panel sub. Assembly(R1602)
	3-2-1	FUNTKB206MRE0	Key Unit(R1600)
	3-2-1	FUNTKB207MRE0	Key Unit(R1601)
	3-2-1	FUNTKB208MRE0	Key Unit(R1602)
	4-3	NTNT-A090WRE0	Turntable tray
	4-5	FCOVPB016MRY0	Stirrer cover assembly
	4-6	FFAN-B010MRK0	Stirrer fan assembly
	4-9	PHOK-B017MRF0	Latch hook
	4-11	NFANPB001MRE0	Fan blade
	4-13	PCOVPB065MRP0	Oven lamp cover
	5-1	FDORFB060MRT0	Door panel assembly
	5-2	FCOV-B146MRK0	Door frame assembly(R1600)
	5-2	FCOV-B145MRK0	Door frame assembly(R1601)
	5-2	FCOV-B147MRK0	Door frame assembly(R1602)
	5-2-1	PGLSPB012MRE0	Front Door Glass(R1600)
	5-2-1	PGLSPB014MRE0	Front Door Glass(R1601)
	5-2-1	PGLSPB013MRE0	Front Door Glass(R1602)
	5-2-5	GWAKPB105MRR0	Door Frame(R1600)

MODEL	REF	PART CODE	DESCRIPTION
	5-2-5	GWAKPB104MRR0	Door Frame(R1601)
	5-2-5	GWAKPB106MRR0	Door Frame(R1602)
	5-4	PSHEPB024MRE0	Sealer film
	5-5	FHNDPB002MRK0	Door handle assembly(R1600)
	5-5	FHNDPB001MRK0	Door handle assembly(R1601)
	5-5	FHNDPB003MRK0	Door handle assembly(R1602)
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB177MRR0	Installation instruction
	6-3	TINSEB210MRR0	Operation manual
	6-12	PFIL-B004MRE0	Charcoal filter
	6-13	PFIL-B002MRE0	Grease filter
R1610/11/12	1-1	FH-DZB012MRY0	High voltage rectifier
	1-2	RC-QZA234WRE0	High voltage capacitor
	1-3	QFS-TA013WRE0	Temperature fuse 150 degrees C (Magnetron)
	1-4	RMOTDA211WRE0	Turntable motor
	1-5	RMOTDA214WRE0	Stirrer motot
	1-6	RTHM-B005MRE0	Thermal cut-out N.O. 60 degrees C (Hood fan)
	1-7	RTRN-B062MRE0	Power Transformer
	1-8	RV-MZA281WRE0	Magnetron
	1-10	QSW-MA110WRE0	Secondary interlock and door sensing switches
	1-11	FFS-BA016/KIT	Monitor switch with fuse assembly
	1-12	FACCDB011MRE0	Power supply cord
	1-14	FMOTEA366WRK0	Hood fan motor
	1-15	RMOTEA346WRE0	Fan motor
	1-16	RLMPTA068WRE0	Oven lamp
	1-17	RTHM-A070WRE0	Thermal cut-out 145 degrees C (cavity)
	1-18	FDTCTA201WRK0	AH sensor
	2-2	PDIF-B018MRF0	Hood exhaust louver(R1610)
	2-2	PDIF-B019MRF0	Hood exhaust louver(R1611)
	2-2	PDIF-B020MRF0	Hood exhaust louver(R1612)
	2-5	GCABUB084MRP0	Outer case cabinet(R1610)
	2-5	GCABUB090MRP0	Outer case cabinet(R1611)
	2-5	GCABUB086MRP0	Outer case cabinet(R1612)
	2-7	FANGKB009MRY0	Hood lamp glass assembly(R1610)
	2-7	FANGKB010MRY0	Hood lamp glass assembly(R1611)
	2-7	FANGKB011MRY0	Hood lamp glass assembly(R1612)
	2-7-1	LANGQB016MRP0	Hood lamp glass angle(R1610)
	2-7-1	LANGQB020MRP0	Hood lamp glass angle(R1610)
	2-7-1	LANGQB027MRP0	Hood lamp glass angle(R1612)
	2-7-2	PGLSPB004MRE0	Hood lamp glass

MODEL	REF	PART CODE	DESCRIPTION
	3-1	DPWBFB037MRU0	Control unit
	3-2	FPNLCB263MRK0	Control panel sub. Assembly(R1610)
	3-2	FPNLCB264MRK0	Control panel sub. Assembly(R1611)
	3-2	FPNLCB265MRK0	Control panel sub. Assembly(R1612)
	3-2-1	FUNTKB213MRE0	Key Unit(R1610)
	3-2-1	FUNTKB214MRE0	Key Unit(R1611)
	3-2-1	FUNTKB215MRE0	Key Unit(R1612)
	4-3	NTNT-A090WRE0	Turntable tray
	4-5	FCOVPB016MRY0	Stirrer cover assembly
	4-6	FFAN-B010MRK0	Stirrer fan assembly
	4-9	PHOK-B017MRF0	Latch hook
	4-11	NFANPB001MRE0	Fan blade
	4-13	PCOVPB065MRP0	Oven lamp cover
	5-1	FDORFB060MRT0	Door panel assembly
	5-2	FCOV-B146MRK0	Door frame assembly(R1610)
	5-2	FCOV-B145MRK0	Door frame assembly(R1611)
	5-2	FCOV-B147MRK0	Door frame assembly(R1612)
	5-2-1	PGLSPB012MRE0	Front Door Glass(R1610)
	5-2-1	PGLSPB014MRE0	Front Door Glass(R1611)
	5-2-1	PGLSPB013MRE0	Front Door Glass(R1612)
	5-2-5	GWAKPB105MRR0	Door Frame(R1610)
	5-2-5	GWAKPB104MRR0	Door Frame(R1611)
	5-2-5	GWAKPB106MRR0	Door Frame(R1612)
	5-4	PSHEPB024MRE0	Sealer film
	5-5	FHNDPB002MRK0	Door handle assembly(R1610)
	5-5	FHNDPB001MRK0	Door handle assembly(R1611)
	5-5	FHNDPB003MRK0	Door handle assembly(R1612)
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB177MRR0	Installation instruction
	6-3	TINSEB210MRR0	Operation manual
	6-12	PFIL-B004MRE0	Charcoal filter
	6-13	PFIL-B002MRE0	Grease filter
R1855A	1-1	FH-DZB010MRY0	High voltage rectifier
	1-2	RC-QZB011MRE0	High voltage capacitor
	1-3	QFS-TA013WRE0	Temperature fuse 150 degrees C
	1-4	RMOTDA174WRE0	Turntable motor
	1-6	RMOTDA214WRE0	Stirrer motot
	1-7	RTHM-0044MRE0	Thermal cut-out N.O 60degrees C
	1-8	RTRN-B063MRE0	Power Transformer
	1-9	RV-MZA255WRE0	Magnetron
	1-11	QSW-MA085WRE0	Secondary interlock and door sensing switches
	1-12	FFS-BA018/KIT	Monitor switch with fuse assembly
	1-13	FACCDB011MRE0	Power supply cord

MODEL	REF	PART CODE	DESCRIPTION
	1-17	FMOTEA362WRK0	Hood fan motor
	1-18	RMOTEA343WRK0	Convection Motor
	1-19	RMOTEA344WRE0	Fan motor
	1-20	RLMPTA077WRE0	Hood Lamp and Oven lamp
	1-21	FDTCTA171WRK0	AH Sensor
	2-1	PFIL-B002MRE0	Grease filter
	2-2	PDIF-B011MRF0	Hood exhaust louver
	2-5	GCABUB065MRP0	Outer case cabinet
	2-7	FANGKB009MRY0	Hood lamp glass assembly
	2-7-1	LANGQB016MRP0	Hood lamp glass angle
	2-7-2	PGLSPB004MRE0	Hood lamp glass
	3-1	DPWBFB061MRU0	Control unit
	3-2	FPNLCB153MRK0	Control panel sub. Assembly
	3-2-1	FUNTKB108MRE0	Key Unit
	3-2-3	MSPRTA050WRE0	Open Button spring
	3-2-4	JBTN-B053MRF0	Open Button
	4-3	NTNT-A006MRE0	Turntable tray
	4-5	FCOVPB002MRY0	Stirrer cover assembly
	4-6	FFAN-B008MRK0	Stirrer fan assembly
	4-14	NFANMB004MRP0	Convection Fan
	4-15	PHOK-B013MRF0	Latch hook
	4-21	NFANPB005MRK0	Fan blade
	4-36	PCOVPB047MRP0	Oven lamp cover
	5	CDORFB238MRK0	Door Assembly, Complete
	5-1	DDORFB074MRY0	Door panel assembly
	5-2	GWAKPB058MRF0	Door frame
	5-3	PGLSPB008MRr0	Door Glass Front
	6-1	CFZK-B131MRK0	Installation material assembly
	6-2	TINSEB141MRR0	Installation instruction
	6-3	TINSEB209MRR0	Operation manual